

# Image Cover Sheet

[illegible]

This page is left blank

This page is left blank

# **System Analysis Report**

*Human Factors Engineering System Analysis of CF18A Air to Ground Operations*

Mike Wellwood  
The HFE Group

Nadine Wellwood  
The HFE Group

Didier Toussaint  
Top Aces Consulting

**Defence and Civil Institute of Environmental Medicine**

**DCIEM CR 2001-072**

The HFE Group Document Number 42-014-002

03/30/2001

This page is left blank

This page is left blank

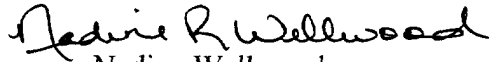


Author



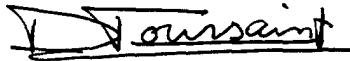
Mike Wellwood

Author



Nadine Wellwood

Author



Didier Toussaint

Approved For Release By



Nadine Wellwood

Document Manager



© Her Majesty the Queen as represented by the Minister of National Defence, 2001

© Sa majesté la reine, représentée par le ministre de la Défense nationale, 2001

## Abstract

The Directorate of Aerospace Requirements (**DAR 5**) is in the process of upgrading the CF-18A to maintain its technical currency over the next 20 years. Part of this upgrade will be the inclusion of a Helmet Mounted Display (**HMD**) with a Night Vision Imaging System (**NVIS**) capability.

The Defence and Civil Institute of Environmental Medicine (**DCIEM**) has undertaken an investigation of HMD and NVIS technologies in order to provide DAR with advice on human factors issues that may arise from their use in the CF-18A. The investigation will focus on the Air to Ground role of the CF-18A as this is the most likely role in North Atlantic Treaty Organization (**NATO**) and coalition activities. The Air to Ground role of the CF-18A also presents a high cognitive demand on the skills and abilities of the pilot.

This report is the second of two Human Factors Engineering (**HFE**) reports prepared for DCIEM in support of DAR 5. The first report is a Mission Analysis Report of CF18 Air to Ground Operations and should be read in conjunction with this report. This report provides the detailed results of an HFE study of the employment of the CF-18A in an operational Air to Ground environment. The analysis was conducted without the inclusion of the HMD in order to provide a baseline for assessing the future impact of HMD and NVIS procurements on the modernized fighter.

This report includes a Goal Decomposition, Goal Allocation, Operation Sequence Diagrams, Critical Goal Analysis and a Perceptual Control Theory (**PCT**) based Information Flow and Processing Analysis. The results of the HFE Analysis will be used to assess the impact of HMD and NVG technologies and the flow of information in the cockpit of the Modernized CF-18A.

This page is left blank

This page is left blank

## Executive Summary

This report is the second of two Human Factors Engineering (**HFE**) reports prepared for the Defence and Civil Institute of Environmental Medicine in support of the Directorate of Aerospace Requirements (**DAR 5**) of the Department of National Defence (**DND**). The objective of the Human Factors Engineering System Analysis of CF-18A HMD was to establish a baseline of information that could be used to assess the impact of HMD and NVIS technologies on the flow of information in the cockpit of the Modernized CF-18A.

This report documents the findings of the HFE Analysis of the CF-18A in an Air to Ground Role in accordance with the Statement Of Work (**SOW**), Public Works and Government Services Canada (**PWGSC**) Solicitation No. W7711-007675/A.

The analysis follows the general principles and guidelines for HFE as described in MIL-HDBK-46855 "Human Engineering Program Process and Procedures". Specifically, this report addresses the objectives of the SOW to develop a detailed description of the information flow and processing based on a defined CF-18A equipment suite and the employment of the CF-18A in an operational Air to Ground environment. Unlike traditional mission, function and task analyses conducted by DCIEM in the past, this project is based on Perceptual Control Theory (**PCT**) and uses the concept of goals in place of traditional tasks. It also bases the information flow and processing analysis on the individual PCT based data for each goal unlike a traditional information flow and processing analysis conducted on an entire mission segment.

For the purposes of this study, the assumed air vehicle will be the post CF-18A modernization aircraft configuration, avionics sub-systems, weapons systems and Defensive Electronic Warfare Suite (**DEWS**). The assumed air vehicle will incorporate the CF-18A Incremental Modernization Program and Capital Program initiatives described in the Mission Analysis Report, The HFE Group Document # 42-014-001. Although the CF-18A HMD will be an integral part of the CF-18A modernization, for the purpose of establishing an initial reference database, it was not included as part of the assumed air vehicle.

The System Analysis Report includes a goal decomposition, goal allocation analysis, critical goal analysis, operational sequence diagrams and a PCT based information flow and processing analysis. As the intent of this project was to establish a baseline for future work, there are no design recommendations or detailed findings of the suitability of the proposed mission kit.

As a separate task, the results of the system analysis were entered into the Integrated Performance Modelling Environment (**IPME**) to support future modelling activities. The task networks were populated and the initial IP/PCT data was entered. In order to produce useable results from the IPME model, an additional modelling effort would be required. This additional effort was scheduled as an optional work package to be exercised at a later time.

Table of Contents

Abstract ..... iii

Executive Summary..... v

Table of Contents..... vi

List of Figures..... vii

Acknowledgements..... viii

Introduction ..... 1

    General..... 1

    Purpose ..... 1

    Objectives .....2

    Scope .....2

    Report Organization.....2

Functional Goal Decomposition.....4

Goal Allocation Analysis .....7

Operational Sequence Diagrams ..... 12

    General..... 12

    Symbology..... 12

    Development of Operational Sequence Diagrams ..... 14

Critical Goal Analysis..... 15

Information Flow and Processing Analysis ..... 17

Conclusion.....20

References .....21

Glossary..... 1

**List of Figures**

Figure 1 CF18 Top Level Functions .....4

Figure 2 Initial First Level Functions vs. Final First Level Functions .....5

Figure 3 OSD Symbols ..... 13

**Annexes**

Annex A - Glossary

Annex B - Function Flow Diagrams

Annex C - Goal Inventory

Annex D - Goal Allocation Criteria and Weights

Annex E - Goal Allocation

Annex F - Goal Inventory with Completion Times

Annex G - Goal Criticality

Annex H - Operational Sequence Diagrams

Annex I - PCT Goal Analysis Results

## **Acknowledgements**

This System Analysis Report expands upon an initial study conducted by BAE SYSTEMS CANADA INC. (BSC) and makes maximum reuse of much of the methodology contained within the CF188 APG-65 Radar Human Factors Engineering Study Reports published between May 2000 and December 2000 (Contract Serial Number W7714-9-0281). To avoid unnecessary repetition of methodology descriptions, the reader is referred to the corresponding BSC document containing the detailed description.

The Microsoft Access Database used to facilitate data entry and produce the required reports was provided to The HFE Group by DCIEM as Government Furnished Information (**GFI**). The database was originally developed by Mr. Mike Wellwood under sub-contract to BSC and has been used successfully on many Human Factors projects. The database provided was highly modified to meet the project specific needs of this analysis and has been delivered back to DCIEM for use on future projects.

## Introduction

### General

The Directorate of Aerospace Requirements (**DAR 5**) is in the process of upgrading the CF-18A to maintain its technical currency over the next 20 years. Part of this upgrade will be the inclusion of a Helmet Mounted Display (**HMD**) with a Night Vision Image System (**NVIS**) capability.

As the use of **HMD** and **NVIS** technologies in the CF-18A represent new ways of performing old tasks, it was determined essential to establish how this technology would be used and to document the flow of information in the cockpit.

The Defence and Civil Institute of Environmental Medicine (**DCIEM**) has undertaken an investigation of **HMD** and **NVIS** technologies in order to provide **DAR** with advice on human factors issues that may arise from their use in the CF-18A. The investigation will focus on the Air to Ground role of the CF-18A as this is the most likely role in North Atlantic Treaty Organization (**NATO**) and coalition activities. The Air to Ground role of the CF-18A also presents a high cognitive demand on the skills and abilities of the pilot.

The purpose of the Human Factors Engineering (**HFE**) Analysis of the CF-18A **HMD** is to provide an initial human factors analysis of the CF-18A in an operational Air to Ground role. This information is presented in two parts: a Mission Analysis Report and a System Analysis Report. When combined these two reports establish a baseline of information that can be used to assess the implications of employing **HMD** and **NVIS** technologies in the CF-18A.

The results of the Mission Analysis Report included a description of the assumed air vehicle, a Composite Mission Scenario and identified potential Measures of Effectiveness.

For the purposes of this study, the assumed air vehicle was the post CF-18A modernization aircraft configuration, avionics sub-systems, weapons systems and Defensive Electronic Warfare Suite (**DEWS**). The assumed air vehicle incorporated the CF-18A Incremental Modernization Program (**IMP**) and Capital Program initiatives described in the Mission Analysis Report. Although the CF-18A **HMD** will be an integral part of the CF-18A modernization, for the purpose of establishing an initial reference database, it was not included as part of the assumed air vehicle.

The results of the **HFE** Analysis will establish a baseline of information that can be used to assess the impact of **HMD** and **NVIS** technologies and their impact on the flow of information in the cockpit of the Modernized CF-18A.

As a separate task, the results of the **HFE** Analysis were entered into **IPME** to support future modelling activities.

### Purpose

The purpose of this System Analysis Report is to communicate the findings of a Human Factors Engineering Analysis of the CF-18A in an operational Air to Ground role. The results of the **HFE** Analysis were used to populate a baseline Integrated Performance Modeling Environment



(IPME) model that can subsequently be used to support future modelling activities and the assessment of the impact of HMD and NVG technologies on the Modernized CF-18A.

This System Analysis Report includes: a functional/goal decomposition, a goal allocation analysis, a critical goal analysis, operational sequence diagrams (OSD's), and a Perceptual Control Theory (PCT) based information flow and processing analysis.

## Objectives

In order to achieve the purpose described above, the following objectives were identified:

- a. Conduct a functional goal decomposition;
- b. Produce function flow diagrams (FFDs);
- c. Conduct a goal analysis;
- d. Conduct a goal criticality analysis;
- e. Produce operational sequence diagrams (OSDs);
- c. Conduct a PCT based information flow and processing analysis;
- d. Build goal networks of the critical mission segments within IPME; and
- e. Populate the IP/PCT data for each goal within IPME.

## Scope

The System Analysis Report may be read as a standalone analysis of the employment of the CF-18A in an operational Air to Ground role but is better understood when put into context and reviewed after reading the Mission Analysis Report.

When combined with the Mission Analysis Report, the System Analysis Report provides the Project Manager with a baseline of information that can be used to support future modelling activities.

The results of the HFE Analysis will establish a baseline of information that can be used to assess the impact of HMD and NVIS technologies and their impact on the flow of information in the cockpit of the Modernized CF-18A.

## Report Organization

The report is organized into seven sections as follows:

- a. Section One – Introduction. Section One provides background information, the purpose and objectives of the analysis, and the scope and organization of the report.
- b. Section Two – Functional/Goal Decomposition.
- c. Section Three – Goal Allocation Analysis
- d. Section Four – Operational Sequence Diagrams
- e. Section Five – Critical Goal Analysis

- f. Section Six – Information Flow and Processing Analysis
- g. Section Seven – References. Section Seven documents a listing of references used in producing this report.

Annex A – Glossary of Terms and Acronyms.

Annex B – Function Flow Diagrams

Annex C – Goal Inventory

Annex D – Goal Allocation Criteria and Weights

Annex E – Goal Allocation

Annex F – Goal Inventory with Completion Times

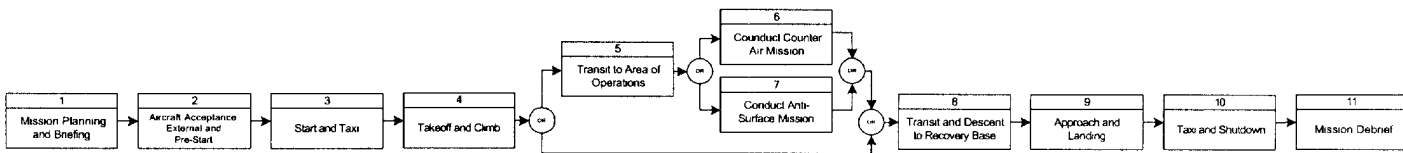
Annex G – Goal Criticality

Annex H – Operational Sequence Diagrams

Annex I – PCT Goal Analysis Results

## Functional Goal Decomposition

The HFE Group based the analysis on the top-level functions identified in the CF188 APG-65 Radar Human Factors Engineering Study, Mission Analysis Report [Reference 1]. As the focus of this project was to analyze the CF18 in the Air to Ground role, only function number seven identified in the following Function Flow Diagram (FFD) was decomposed.



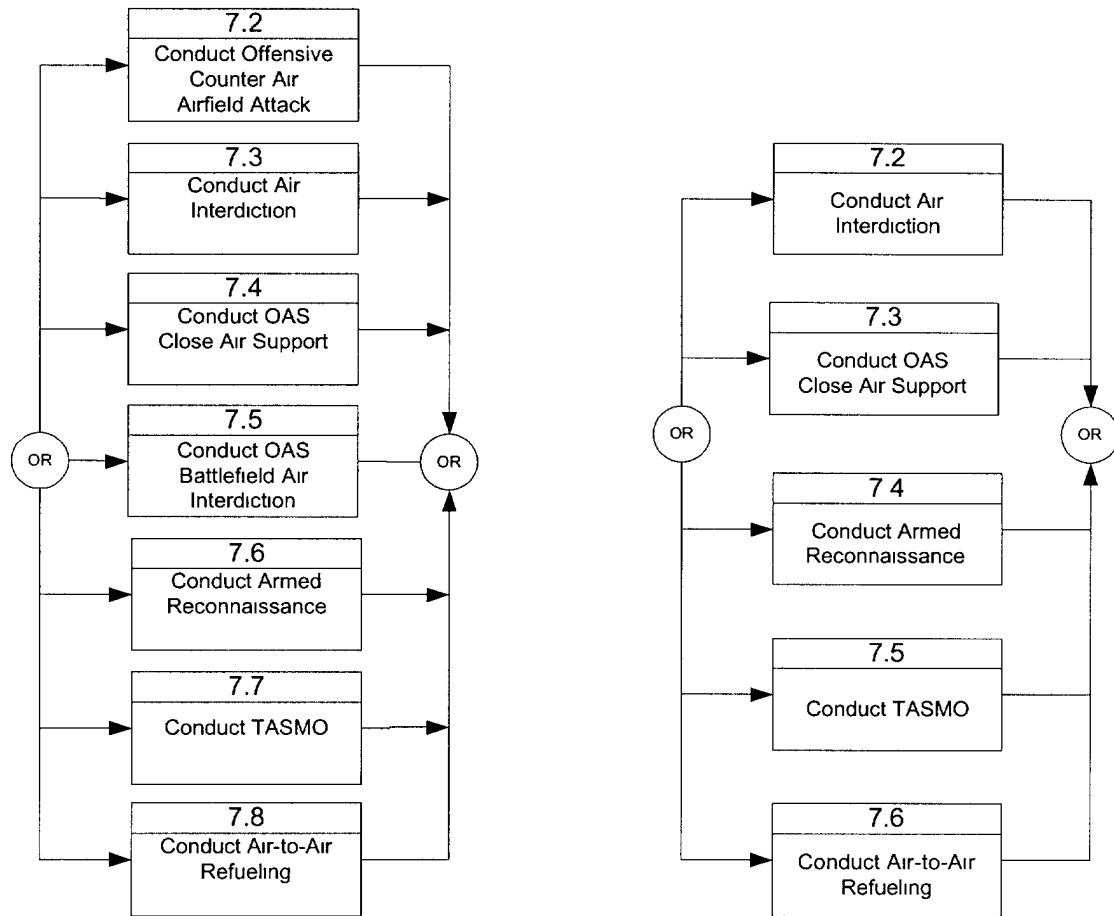
**Figure 1 CF18 Top Level Functions**

Function seven, ‘Conduct Anti-Surface Mission’ was decomposed down an additional two levels and FFDs were generated to support each level. The FFDs generated as a result of this analysis are included as Annex B to this document.

The Human Factors (HF) Analyst and Subject Matter Experts (SMEs) conducted a thorough review of the FFDs to ensure the diagrams effectively represented an actual CF-18 air to ground mission. During the generation of the FFDs, the team tried to remain consistent with the work previously conducted under the CF188 APG-65 Radar Human Factors Engineering Study, Mission Analysis Report [Reference 1]. There was however, one exception with the modelling of function 7.7, React to Threats. This function was presented in each second level FFD within the BSC analysis. For the purposes of this contract it was determined that ‘React to Threats’ should be identified as a separate first level function.

During the initial development of the FFDs, all of the CF18 primary air to ground missions were identified on the first level FFD. This created an extremely large diagram that would have added significant complexity to the subsequent analysis. After a detailed cognitive walkthrough of each mission type with the SMEs, it was determined that the missions could be logically grouped into first level functions that would capture the activities of each detailed mission type. It is important to note that although the first level FFD does not name the mission type specifically, the functions performed for all air to ground missions are contained within one of these higher level functions.

Figure 2 represents the initial first level functions identified versus the final first level functions that were selected.



**Figure 2 Initial First Level Functions vs. Final First Level Functions**

Upon completion, the decomposition of the top and first level goals (functions) were submitted to the Scientific Authority (SA) and Technical Authority (TA) for review. This early review enabled the SA and TA to track the work as it was completed and encouraged feedback that was incorporated into the diagrams at an early stage thus preventing the potential for re-work due to misunderstandings or a lack of communication.

Following the review of the top and first level goals, the goals were further decomposed down to the fourth level. Although this analysis did not require all lowest level goals to exist at the fourth level, consistency with traditional Mission Function and Task Analysis (MFTA) techniques was utilized to ensure ease of data import/export and numbering and to provide a common framework for the analysis. The Access Database that was used to populate the data at the first and second levels was also used for entering the detailed data down to the fourth level.

Because time was very limited on this project (40 working days), only the information required to populate the Operational Sequence Diagrams (OSDs) was generated at this step in the analysis. The information gathered consisted of Goal Number, Goal Label, Goal Description, and a Goal Completion Time (an average time only with no distribution). This was enough

information to conduct a Critical Goal Analysis and encouraged a concentrated effort that focused on the population of critical mission segment data.

The SMEs used Microsoft Access 2000 for data entry and storage. The database was developed from a Microsoft Access 97 database provided to The HFE Group as Government Furnished Information (**GFI**). The database enhanced the SMEs ability to distribute the work (including offsite distribution) allowing each SME to work on a replica of the original database. Each replica was then subsequently synchronized to the master database at regular intervals throughout the project.

At the fourth level, source goals were used to minimize repetition within the database. Because each high level function contained a sub-function, the fourth level goal would be 'mapped' to the first occurrence of the same goal within the database. For example, goal number 7.2.3.1(c) Conduct Formation Join Up has a source goal number of 7.1.1.3(c). This indicated that Conduct Formation Join Up occurred in section 7.2 Conduct Air Interdiction and in section 7.1 Conduct Tactical Rendezvous. Since the goal is the same in both sections, only the first occurrence of the goal is populated with data. All subsequent goals from other sections were then mapped to this source goal. In total, there were 908 individual fourth level goals identified. All 908 goals can be mapped to 268 source goals.

A complete inventory of goals is presented as Annex C to this document.

## Goal Allocation Analysis

Following the completion of the goal decomposition down to the fourth level, a goal allocation analysis was conducted. The method used to conduct this analysis was in accordance with MIL-HDBK-46855A. This methodology is commonly employed and has been used for numerous Air Force HF projects in previous years for DCIEM and DTA. For a detailed description of the methodology, please refer to the CF188 APG-65 Radar Human Factors Engineering Study, Function and Task Analysis Report [Reference 2].

The Microsoft Access Database contained an environment for conducting function allocation that was optimized for this project. To save time and effort, the existing default weighting factors identified in the CF188 APG-65 Radar Human Factors Engineering Study, Function and Task Analysis Report were used. These weighting factors have been used on previous projects and were verified for applicability to the CF-18 project [Reference 2].

The following table identifies the criteria used for conducting the goal allocation and their associated weights:

**Table 1 Goal Allocation Criteria and Weights**

<b>CRITERIA</b>	<b>WEIGHT</b>
Boredom	0 012
Complexity	0.051
Computation	0.031
Concept of Operations	0.084
Data Measurement	0.035
Data Sensing	0.057
Dexterity	0.029
Info Availability	0 055
Input Sensitivity	0.061
Intelligence	0.053
Memory	0.055
Mobility	0.011
Pattern Recognition	0.074
Power	0.013
Problem Solving	0.057
Reasoning	0.066
Reliability	0 051
Response Time	0.047

CRITERIA	WEIGHT
Situation Awareness	0.059
Technical Risk/Cost	0.027
Verbal Task	0.073

Before commencing work on the goal allocation, it was first necessary to provide the SMEs who had conducted the previous work under the supervision of the HF Analyst, with a definition of each of the criteria. It was essential that all the SMEs fully understood each of the criteria before populating the data. The following verbal anchors were used to determine whether the goal was best performed by the human or the machine.

### **1. Problem Solving**

Machine: This task requires only a single, well-defined approach for optimal problem solution.

Human: This task requires the selection and use of multiple methods, trial and error, improvisation, and/or knowledge acquired in the course of the mission for optimal problem solution.

### **2. Computation**

Machine: This task requires complex or repetitive calculations to be performed with precision.

Human: This task requires only estimations or generalizations to be made and precision is not essential.

### **3. Complexity**

Machine: This task requires simultaneous multiple-channel data input and/or output (e.g. receive/process visual and aural information simultaneously).

### **4. Computation**

Machine: This task requires complex or repetitive calculations to be performed with precision.

Human: This task requires estimations or generalizations to be made and precision is not essential.

### **5. Concept of Operations**

Machine: N/A

Human: The current concept of operations requires that a human perform this task because of the safety, moral, ethical or policy aspects of the task.

## **6. Data Measurement**

Machine: This task requires the measurement of signals (e.g. temperature, contamination level, radar range) in absolute and precise terms.

Human: This task requires the determination or generalization of relative signal levels or on-off states, rather than precise and absolute measurement.

## **7. Data Sensing**

Machine: This task requires the detection of signals that are outside the range of human perception, such as Infra-Red (IR).

Human: N/A

## **8. Dexterity**

Machine: N/A

Human: This task requires great dexterity and/or versatile and adaptive manipulation of objects.

## **9. Information Availability**

Machine: N/A

Human: Some or all of the information required to complete this task cannot be provided through a data bus (i.e. electronically).

## **10. Input Sensitivity**

Machine: N/A

Human: This task requires the detection of low absolute-value signals, and/or detection of signals through overlapping noise.

## **11. Intelligence**

Machine: N/A

Human: This task requires the detection and reporting of low-probability events or information incidental to the primary task.

## **12. Memory**

Machine: This task requires high-capacity and high-precision short and long-term memory with very short access time.

Human: This task requires multiple-access memory of concepts, principles and learned relationships.

## **13. Mobility**

Machine: N/A



Human: This task requires mobility within the workspace environment.

#### **14. Pattern Recognition**

Machine: N/A

Human: This task requires the detection of variable and/or subtle patterns and trends.

#### **15. Power**

Machine: This task requires the consistent application of large, constant forces.

Human: N/A

#### **16. Problem Solving**

Machine: This task requires only a single, well-defined approach for optimal problem solution.

Human: This task requires the selection and use of multiple methods, trial and error, improvisation, and/or knowledge acquired in the course of the mission for optimal problem solution.

#### **17. Reasoning**

Machine: N/A

Human: This task requires inductive reasoning using incomplete information.

#### **Reliability**

Machine: This task requires a consistent level of performance over a long period.

Human: N/A

#### **18. Response Time**

Machine: This task requires very fast response times.

Human: N/A

#### **19. Situation Awareness**

Machine: N/A

Human: The performance of this task by a human operator contributes to that operator's maintenance of situational awareness.

#### **20. Technical Risk or Cost**

Machine: N/A

Human: A machine of the required capability or complexity would be very large, costly and/or would require more power than is economically feasible.

**21. Verbal Task**

Machine: N/A

Human: This task requires sending or receiving context-sensitive information expressed in verbal communication.

The SME used the Access Database to assign a value between -1,0 and 1 to each goal depending on whether the goal was better suited to the man (1) or machine (-1) for each criterion. A value of 2 (mandatory man) or -2 (mandatory machine) was entered for goals that were mandatory allocated to the 'man' or the 'machine' based upon doctrine or standard operating procedures.

The MS Access program was then used to calculate the values assigned to each goal allocation and a report was generated. All marginal allocations (those with a value between -0.065 and 0.065 representing no preference towards man or machine) were then revisited and overridden to 'man' or 'machine' by the HF analyst as required.

Out of the original 265 unique goals that were identified by the SMEs and HF Analysts, 79 goals were identified as being candidates for performance by the machine. There were also 38 marginal allocations that were re-visited by the analyst that resulted in 19 re-allocations.

Typically once a machine goal is identified, an additional human goal must be created to provide the monitoring function of this machine goal. This would have resulted in an additional 79 goals being created as a monitoring function of the machine goals. To reduce the time and effort associated with the completion of this task, it was determined that the machine goals as identified in the goal allocation would be re-written to describe the human function associated with monitoring the machine. All goals that were re-written to describe the human monitoring function have been clearly identified in the rationale column of Annex E Goal Allocation.

## Operational Sequence Diagrams

### General

Operational Sequence Diagrams of the Air-to-Ground segment of the Composite Mission Scenario were developed in accordance with MIL-HDBK-46855A. To facilitate greater flexibility in the creation of the OSDs, The HFE Group used Microsoft Visio 2000 to generate these diagrams. This application provided a graphical user interface that allowed the user to drag-and-drop elements onto the diagram and provided a **WYSIWYG** (what you see is what you get) interface such that the OSD was developed graphically rather than through a word processing text script. Visio allowed the entire OSD drawing to be displayed and printed on a plotter (28 x 41 sheets of paper) allowing the reader to easily follow along the timeline without interruption. This provided an excellent means of presenting the diagrams for SME reviews and minimized the confusion associated with hundreds of loose sheets of paper. MS Visio was flexible enough to allow for the integration of additional information to be displayed (such as the interaction with system components) and allowed an appropriate mapping with the corresponding mission scenario.

The significant advantage of developing the OSDs was to provide a basis for visualizing the detailed goal data against a timeline in order to determine where high workload or information processing problems may occur. The OSD's graphically depict the composite mission scenario against a timeline and enable the HF Analyst to identify the critical mission segments within the scenario that will require further analysis. They have proven to be particularly useful when analysing highly complex systems that require time critical information involving multiple users.

### Symbology

OSDs make use of symbology to indicate actions, decisions, transmission of information and timing requirements that permit the HF Analyst to analyse the flow of information and operator tasks as they occur in relation to the mission timeline.

The symbology used in the OSDs followed the conventions as described in MIL-HDBK-46855 [Reference 8]. The following sub-paragraphs provide a brief summary of the symbology used in developing the operational sequence diagrams for the CF-18A Air to Ground role. If there was a requirement to deviate from MIL-HDBK-46855, an explanation is offered:

- a. Task. A task symbol was represented by a circle and indicates an action, function or process is being performed.
- b. Continuous Tasks. A continuous task symbol was used to indicate an ongoing (continuous) task that in most cases starts at the beginning of a segment or at the completion of another task. Continuous tasks are indicated by a circle (task symbol) with a vertical arrow that points downward from the centre of the symbol. Continuous tasks continue until they are interrupted.

- c. Repeated Tasks. Tasks that are performed repeatedly are presented by a circle (a task symbol) with a hook that extends from the centre of the symbol. These tasks continue to repeat unless they are interrupted.
- d. Transmit. When information was transmitted it was displayed as either a one-way communication or a two-way communication through the use of ARROWS. A double arrow indicated a participative method of communication (all parties participating) otherwise a single arrow was used to indicate a one-way communication. The direction of the arrow indicated the intended direction of the message.
- e. Receipt. Whether one-way or two-way, a transmit arrow must have a receipt symbol. This half circle is the intended receiver of the message. There may or may not be a response to the message being received.
- f. Task Interrupt and Resume Tasks. Due to the inherent time constraints of the project, it was determined that the OSDs would not include task interrupts and resume tasks as a general rule. However, on occasion the Subject Matter Expert felt it was necessary to identify a task interrupt that had a significant impact on the tasks being performed. As the information from the OSDs was used to populate the IPME models, this information can be entered directly into IPME as part of any follow on work.
- g. Time Intervals. Time is displayed along the left hand side of the page in the column marked Time. Each task description is followed by a task completion time to assist the reader with the flow of events. Continuous tasks have been assigned a completion time of 999 for ease of recognition.

The following figure describes the symbols used in the development of the OSDs for the CF18A air to ground analysis.

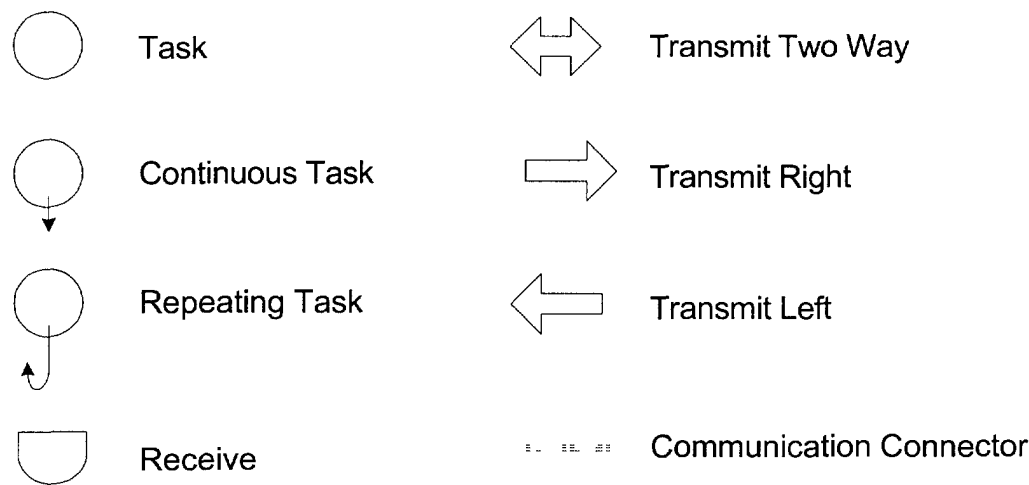


Figure 3 OSD Symbols

Each task contains the following additional information: Task ID, Task Description, and Completion Time. This information was used to assist the Analyst with the identification of each task, to improve readability and to assist with the identification of Critical Tasks within each

critical mission segment. This task information appears to the right and centre of each task except for transmit or receipt tasks when this information may appear under the dotted lines connecting the transmit/receipt symbols.

- a. Task ID. The Task ID is a number [i.e. 7.7.5.2(b)] that corresponds to the Task ID in the MS Access 2000 Database. This database was modified and expanded upon to meet the requirements of this project.
- b. Task Description. The task description is a brief narrative of the task being performed.
- c. Task Completion Time. The task completion time is presented after the task description and represents the estimated time it would take to complete the task being performed. Please note that the task completion times do not take into account any variance. They are simply an estimate of the time it would take to complete the task as assigned by the Subject Matter Experts employed on this project. Continuous tasks have a completion time of 999 to indicate to the reader that they are continuous tasks.
- d. Repeating Task Times. When a task is repeating, the repeat interval is provided.

## **Development of Operational Sequence Diagrams**

The HFE Group generated four operational sequence diagrams to support the corresponding composite mission scenario as described in the Mission Analysis Report. The OSDs were used to provide a graphical representation of the tasks being performed against the mission segment timeline.

The four OSDs developed are listed as follows:

- a. Mission Segment 7.1 – Conduct Air Interdiction RV
- b. Mission Segment 7.2 – Conduct Air Interdiction
- c. Mission Segment 7.2 – Conduct Night BAI
- d. Mission Segment 7.3 – Conduct OAS/CAS

From within these four OSD's, six critical mission segments were identified and annotated with a blue box and mission segment title. These mission critical segments were identified as a result of conducting a critical goal analysis and are described in detail in the next section of this report. Upon completing the Critical Goal Analysis, the critical mission segments of the OSDs required further analysis. The results of this analysis are presented in an information flow and processing analysis, Section Six of this report and attached as Annex I, PCT Goal Analysis. It is the detailed results of the PCT based information flow and processing analysis that was used to populate the IPME models.

The Operational Sequence Diagrams are attached to this report as Annex H.

## Critical Goal Analysis

A Critical Goal Analysis was conducted for each of the unique goals as identified in the MS Access 2000 database. The analysis was conducted in accordance with the techniques employed by DCIEM and DTA on other Air Force HF projects. For a complete description of the techniques used, please refer to the SOLE Methodology Documentation [Reference 6]. Each unique goal was given a number between 0 and 10 for each of the five criteria related to Goal Criticality. The criteria used in this analysis are described below:

1. **Safety.** A value from 1 to 10 is assigned according to the degree to which the non-completion, or incorrect completion, of a given task would adversely affect the safety of relevant personnel.
2. **Mission.** A value from 1 to 10 is assigned according to the degree to which the non-completion, or incorrect completion, of a given task would jeopardize or limit the successful completion of the mission.
3. **Efficiency.** A value from 1 to 10 is assigned according to the degree to which the non-completion, or incorrect completion, of a given task would reduce human efficiency by requiring corrective action by one or more individuals who would not normally have been involved.
4. **Reliability.** A value from 1 to 10 is assigned according to the degree that non-completion, or incorrect completion, of a task would adversely affect the long- or short-term reliability of the system. This included situations that would decrease the mean time between failures, result in the requirement for maintenance action, or render the system unserviceable for the remainder of the mission.
5. **Cost.** A value from 1 to 10 is assigned according to the degree to which the non-completion, or incorrect completion, of a given task would result in increased monetary cost.

Each unique goal was given a Goal Criticality Rating (TCR) between 1 and 10 (10 indicating the goal was absolutely critical to the successful completion of the mission). Each Goal was then assessed to determine if the demands of the goal approached the limits of human performance and to determine if conducting 'further analysis' of the goal would likely result in improvement. The final value assigned to each unique goal was an Adjusted Goal Criticality Rating (ATCR). The ATCR range was between 1 and 10 (10 being the most critical).

While populating the data for the ATCR, the team encountered some difficulty in addressing the 'further analysis' criteria. The 'further analysis' criteria is based upon an assumption by the HFE Analyst that 'further analysis' of the goal would likely result in improvement. After considering previous projects when this analysis may have been an important consideration, it was determined that there was not enough information available to address this criteria for this project and it was therefore assigned a value of 0. Due to this lack of information, there were no adjustments made to the TCR for this criteria.

To maintain consistency with naming conventions previously employed on other HF projects, the term TCR or Task Criticality Rating was used to describe the Goal Criticality Rating. The same applies for the ATCR or Adjusted Task Criticality Rating; ATCR was used to describe the Adjusted Goal Criticality Rating. The Microsoft Access database provided as GFI for this project was used to calculate the TCR and ATCR. When the database was initially developed it was designed with this functionality.

All goals with an assigned ATCR value of 8, 9 and 10 were deemed to be Critical Goals. These critical goals required further analysis to assist the HF Analyst with the identification of critical mission segments.

The OSDs were once again used and proved to be a valuable tool in determining the location of the critical goals within the mission. The OSDs were updated to include colour codes for each of the Critical Goals identified as a result of the Critical Goal Analysis. A critical goal with an assigned ATCR of 8 was also assigned a colour code of blue, a goal with an ATCR of 9 was assigned a colour code of yellow, and any goal with an ATCR of 10 (and considered to be the most critical) was assigned a colour code of red. This colour coding created a visual display that would allow the HF Analyst to visually identify the concentration of Critical Goals as they occurred in the mission. These concentrations of critical goals (often the largest concentration of red within the OSDs) were then identified and labelled as critical mission segment. Each critical mission segment was then assigned a title and is explained in greater detail in the next section of this report, Information Flow and Processing.

## Information Flow and Processing Analysis

A review of the four operational sequence diagrams easily identified six critical mission segments. Each critical mission segment was annotated with an enclosed blue box and clearly labelled with a name and segment number. The following is a list of each of the Critical Mission Segments and the Critical Mission Segment Number:

1. Critical Mission Segment #1 – **Evade Air Threat During Low Level Ingress** (SU-27)

Part of OSD #2, Section 7.2, Conduct Air Interdiction

2. Critical Mission Segment #2 – **General Purpose Bomb Attack** (Daytime)

Part of OSD #2, Section 7.2, Conduct Air Interdiction

3. Critical Mission Segment #3 – **Evade Threat (SA-8) During Medium Level Ingress** (Night)

Part of OSD #3, Section 7.2, Conduct Night BAI

4. Critical Mission Segment #4 – **GPS Guided Bomb Attack** (Night)

Part of OSD #3, Section 7.2, Conduct Night BAI

5. Critical Mission Segment #5 – **Self-Lasing Guided Bomb Attack** (Night)

Part of OSD #4, Section 7.3, Conduct Night OAS/CAS

6. Critical Mission Segment #6 – **Maverick Air to Ground Missile Attack** (Night)

Part of OSD #4, Section 7.3, Conduct Night OAS/CAS

The database was updated to indicate the goals contained within the critical mission segments as well as all the continuous and repeating goals from the top of each OSD that were active during the mission segment. There were 130 unique goals identified that fit these criteria. Of these goals, many were repeated throughout the Critical Mission Segment therefore the actual number of goals within all the segments was much higher. Each of these goals was then populated with the Information Processing (IP) and Perceptual Control Theory (PCT) data required for modelling within the IPME application. The Microsoft Access Database provided as GFI for this project was used to populate the IP/PCT data. A detailed description of the methodology is contained within the Perceptual Control Theory Approach to Human Systems Analysis Summary Report prepared for DCIEM by BAE Systems Canada [Reference 3]. A detailed description of the Information Processing Model and the data requirements within IPME is contained within the IPME Version 1.10 Reference Manual, Chapter 13, Information Processing Model [Reference 4].



The following Goal-Level IP Model Parameters were generated for all goals as required for the IP/IPME modelling environment:

**IP Components:**

- a. **IP No.**—Modeled within IPME only. The IP No. represented within the database is a mapping number to indicate the Goal that the IPME task maps to within the Microsoft Access Database;
- b. **Operator**—All the operators in this analysis were pilots. The goals as described in the Microsoft Access Database are independent of the individual aircraft being flown. Within IPME, the goals were duplicated and an assignment to the Lead Aircraft, Number 2, Number 3 or Number 4 Aircraft was made.
- c. **Goal Label** —a narrative description of the goal.
- d. **Goal Completion Time**—the mean time to complete the task or accomplish the goal/objective. No time distribution was used on this project, only the mean time.
- e. **Auditory Category**—an assignment of the auditory nature of the task/goal/objective for use in identifying task interference within the IP/IPME performance prediction analysis environment;
- f. **Externally Cued?**—a yes/no/not applicable indication of external task cueing;
- g. **Cognitive Category**—an assignment of the cognitive nature of the task/goal/objective for use in identifying task interference within the IP/IPME performance prediction analysis environment;

**IP Scheduling:**

- a. **Scheduling and Priority Category**—an assignment of the priority (and related parameters including allowable delay and degree of difficulty) of the task/goal/objective in accordance with the IPME Version 1.10 Reference manual p.13-16 [Reference 4];
- b. **Allowable Delay** – the allowable delay (K) value which defines the allowable delay as a multiplier of the mean goal time;
- c. **Degree of Difficulty**- used for continuous goals where the degree of difficulty (D) is defined as a percentage of the total goal time where the goal is being attended;
- d. **Interruptable?**—a yes/no indication of whether or not the task can be interrupted;
- e. **Resumable?**—a yes/no indication of whether the task can be resumed after having been interrupted (without additional workload);
- f. **Sheddable?**—a yes/no indication of whether or not the tasks can be shed; and
- g. **Shed if Late?**—a yes/no indication of whether the task is to be shed rather than starting late.

An Information Flow and Processing Analysis was conducted on the selected Critical Mission Segments. This is not a traditional Information Flow and Processing Analysis that would be used to analyze the Critical Mission Segments as a whole but rather an analysis that identifies all the PCT data required for each goal within each Mission Segment. This analysis is based upon the methodology and data entry fields used in the Perceptual Control Theory Approach to Human Systems Analysis Summary Report prepared for DCIEM by BAE Systems Canada [Reference 3]. The key difference between a traditional Information Flow and Processing Analysis and the PCT based analysis is that the PCT analysis looks at each goal separately rather

than looking at the Critical Mission Segment as a whole. This gives a fine degree of resolution for the analysis but does not provide the 'big picture' of how information flows through the segment. A traditional Information Flow and Processing Analysis also looks at other criteria such as consequences of error and impact on situational awareness.

The following data was generated for all goals as required for the PCT analysis:

- a. **Data Common to IP/IPME**—various data common to both the IP/IPME and the PCT analysis including IP No., goal/objective, task description, operator assignment, and link to the corresponding Access Database No., if different;
- b. **Initiating Conditions**—a narrative description of the conditions that would cause the goal to be attended (i.e. the goal has not been achieved, error (e) .0);
- c. **Initiating Action**—a narrative description of the actions to be taken in attending to the goal;
- d. **Ending Conditions**—a narrative description of the conditions that would cause attendance of the goal to be terminated (i.e. the goal has been achieved, e=0);
- e. **Ending Actions**—a narrative description of the actions to be taken when the goal has been achieved;
- f. **Knowledge**—narrative descriptions of declarative and situation knowledge requirements for attending to the goal;
- g. **Output/Behaviour**—an assignment of the human behaviours, and related cognitive/perceptual process categories, for goal attendance;
- h. **Input/Sensation**—an assignment of the input sensations, and related cognitive/perceptual process categories, for assessing goal achievement;
- i. **Influenced Variables (External)**—a listing of the external variables within the control loop that the operator affects while attending to the goal (external variables are observable by a third party);
- j. **Output Interface**—a listing of the interfaces the operator uses to interact with the external world;
- k. **Influenced Variables (Internal)**—a description of the operator's perception as to whether the goal has been achieved or not (internal variables are not observable by a third party);
- l. **Output Interface**—a listing of the interfaces which influence the operator's perception as to whether or not the goal has been achieved; and
- m. **Feedback to higher-level goals?**—a yes/no indication of whether the achievement of the goal influences one or more higher level goals.

The completed database and the OSDs were used by Micro Analysis and Design to build the network model within IPME. One of the aims of this contract was to provide a populated network model within the IPME application in order to facilitate further research on the CF18 in the air to ground role. As the focus was exclusively on data population, no effort was made to model all the interdependencies required to create a fully functional model. Because the model is not fully functional, there was no opportunity to perform any analysis of the data or to verify the data integrity with IPME. This activity has been identified as an optional work package that would be exercised at a later time.

## Conclusion

A complete Mission, Function and Goal Analysis was conducted and a populated data model was developed within IPME. The project was completed under an extremely aggressive schedule of just 40 working days. The ability to re-use much of the information provided by DCIEM to The HFE Group team along with a very focussed methodology allowed the project to be completed on time. Because of the time restriction imposed on the program, the analysis does not cover the wide scope of a traditional Mission, Function and Task Analysis nor does the documentation provide an exhaustive description of methodology. What the project does provide, is an in depth analysis of the most critical mission segments with a solid base of data within IPME to continue future work.

## References

1. CF188 APG-65 Radar Human Factors Engineering Study, Mission Analysis Report, BAE Document Number 1000-1205, Contract Serial Number W7714-9-0281, 31 May 2000.
2. CF188 APG-65 Radar Human Factors Engineering Study, Function and Task Analysis Report, BAE Document Number 1000-1213, Contract Serial Number W7714-9-0281, 15 September 2000.
3. Perceptual Control Theory Approach to Human Systems Analysis, Summary Report, BAE Document Number 1000-1204, Contract Serial Number W7711-97552/001-TOR, 28 March 2000.
4. IPME Version 1.10, Reference Manual, Micro Analysis and Design, 1999.
5. CF188 APG-65 Radar Human Factors Engineering Study, Information Flow and Cognitive Processing Analysis Report, BAE Document Number 1000-1214, Contract Serial Number W7714-9-0281, 15 September 2000. TBD
6. System Operator Loading Evaluation, Methodology Documentation, Canadian Marconi Company, Reference Number RAE1 c/299, 8 January 1993
7. Statement of Work, For a CF188 APG Radar Human Factors Engineering Study, 17 August 1999.
8. CF188 APG-65 Radar Human Factors Engineering Study, Program Management Plan, 19 February 2000.
9. MIL-HDBK-46855, Human Engineering Requirements for Military Systems, Equipment and Facilities.
10. Omnibus CF-18 Incremental Modernization Project Statement of Operational Requirement, March 2000.
11. The (CF-18) Fighter Pilot Training Directive 2000, February 2000.
12. Chief of the Air Staff Planning Guidance 2000, Fall, 1999.
13. Systems Operator Loading Evaluation (SOLE) Methodology Documentation, Version 3.0, Canadian Marconi Company,
14. January 1993. 8. CF-18A/CF-18B, Aircraft Operating Instructions, Canadian Forces Technical Orders (CFTO) C-12-188-NFM-MB-001/002.
15. CF-18A/CF-18B Pilot's Weapons Checklist, CFTO C-12-188-NFM/MC-004.
16. CF-188 Course Training Standard (CTS) for CF-188 Pilot Training, A-P8-032- 188/PC-D08, 1999.
17. CF-188 Flying Training Manual/How to Fly Manual, 1999.
18. CF-188 Mission Briefing Guide, 1999.
19. CF-188 Weapons System Trainer (WST) Mission Briefing Guide, 1999.

# **Annex A**

## **Glossary**

## Glossary

24/7	24 hours a day, 7 days a week
AAR	Air-to-Air Refuelling
AC	Alternating Current
ACDVS	Aircrew Chemical Defence Ventilator System
ACM	Air Combat Manoeuvring
ACM	Airspace Control Measures
AGL	Above Ground Level
ALSE	Advanced Life Support Equipment
AMIRS	Advanced Multi-Role Infrared Sensor
AMLCD	Active Matrix Liquid Crystal Display
AMRAAM	Advanced Medium Range Air-to-Air Missile
AOB/GOB/EOB	Air, Ground and Electronic Orders of Battles
AST	Air-to-Surface Tactics
AWACS	Airborne Warning and Control System
BCA	Border Crossing Authority
BDA	Bomb Damage Assessment
BST	Boresight Mode
CAMAO	Combined Allied Military Air Operation
CF	Canadian Forces
CFIT	Controlled Flight Into Terrain
CONOPS	CONcept of OPerationS
CR	Combat Ready
D/L	Data Link
DAR	Directorate of Air Requirements
DC	Direct Current
DCS	Digital Communication System
DDIs	Digital Display Indicators
DEWS	Defensive Electronic Warfare Suite
DFFG	Deep Fathom Fishing Grounds
DND	Department of National Defence
ECCM	Electronic Counter Counter Measures
ECCM	Electronic Counter-Counter Measures

ECS	Environmental Control System
EGI	Embedded Global Positioning/Inertial Navigation System
EGR	Embedded GPS Receiver
ELE	Estimated Life Expectancy
F/A	Fighter Attack
FAOR	Fighter Area of Operational Responsibility
FLIR	Forward Looking InfraRed
FPTD	Fighter Pilot Training Directive
FSU	Former Soviet Union
GP	General Purpose
GPWS	Ground Proximity Warning System
HFE	Human Factors Engineering
HMD	Helmet Mounted Display
HOBS	High Off Boresight System
HOTAS	Hands-On-Throttle-And-Stick
HSD	Horizontal Situation Display
HUD	Heads-Up Display
HVAA	High Value Airborne Asset
IAD	Integrated Air Defence (IAD) System and SAM: SA-6, SA-7, SA-8, SA-11, SA-13, SA-14 and SA-16
IFR	Instrument Flight Rules
IMP	Incremental Modernization Project
INS	Inertial Navigation System
IR	InfraRed
JDAM	Joint Direct Attack Munition
JSOW	Joint Stand Off Weapon
LGB	Laser Guided Bombs
LST	Laser Spot Tracker
MCs	Mission Computers
MDG	Multi-purpose Display Group
MDLS	Mission Data Loading System
MFFOs	Mixed Fighter Force Operations
MIDS	Multi-functional Information Distribution System
MILSATCOM	Military Satellite Communications

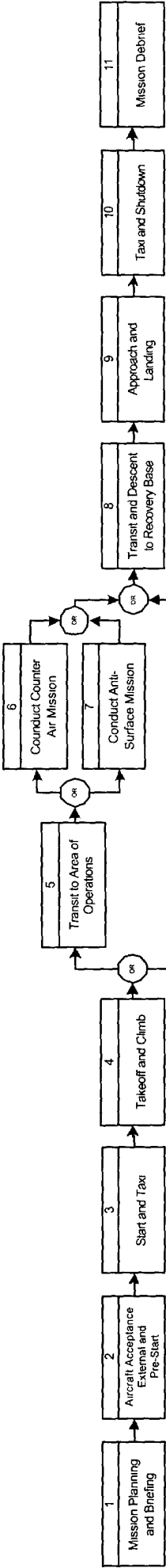
MOEs	Measures of Effectiveness
MRI	Multiple, Release, and Interval
MSI	Multi-Sensor Integration
NATO	North Atlantic Treaty Organization
NCTR	Non-Cooperative Target Recognition
nm	Nautical miles
NORAD	North American Air Defence
NVGs	Night Vision Goggles
NVIS	Night Vision Imaging Systems
OAS	Offensive Air Support
OEM	Original Equipment Manufacturer
OFP	Operational Flight Program
OPFOR	OPposing FORces
OSDs	Operational Sequence Diagrams
PC	Personal Computer
PGMs	Precision Guided Munitions
PPS	Precise Positioning Service
psi	pounds per square inch
PSKE	Pilot Skill and Knowledge Element
PSKL	Pilot Skill and Knowledge Level
PTLL	Pilot Tactical Leadership Level
PWGSC	Public Works and Government Services Canada
RAF	Royal Air Force
RNLAF	Royal Netherlands Air Force
ROE	Rules Of Engagement
RV	RendezVous
RWR	Radar Warning Receiver
RWS	Range While Search
SAM	Surface-to-Air Missile
SAR	Semi Active Radar
SLOC	Sea Lines Of Communication
SMS	Stores Management Set
SOW	Statement Of Work
SPS	Standard Positioning Service



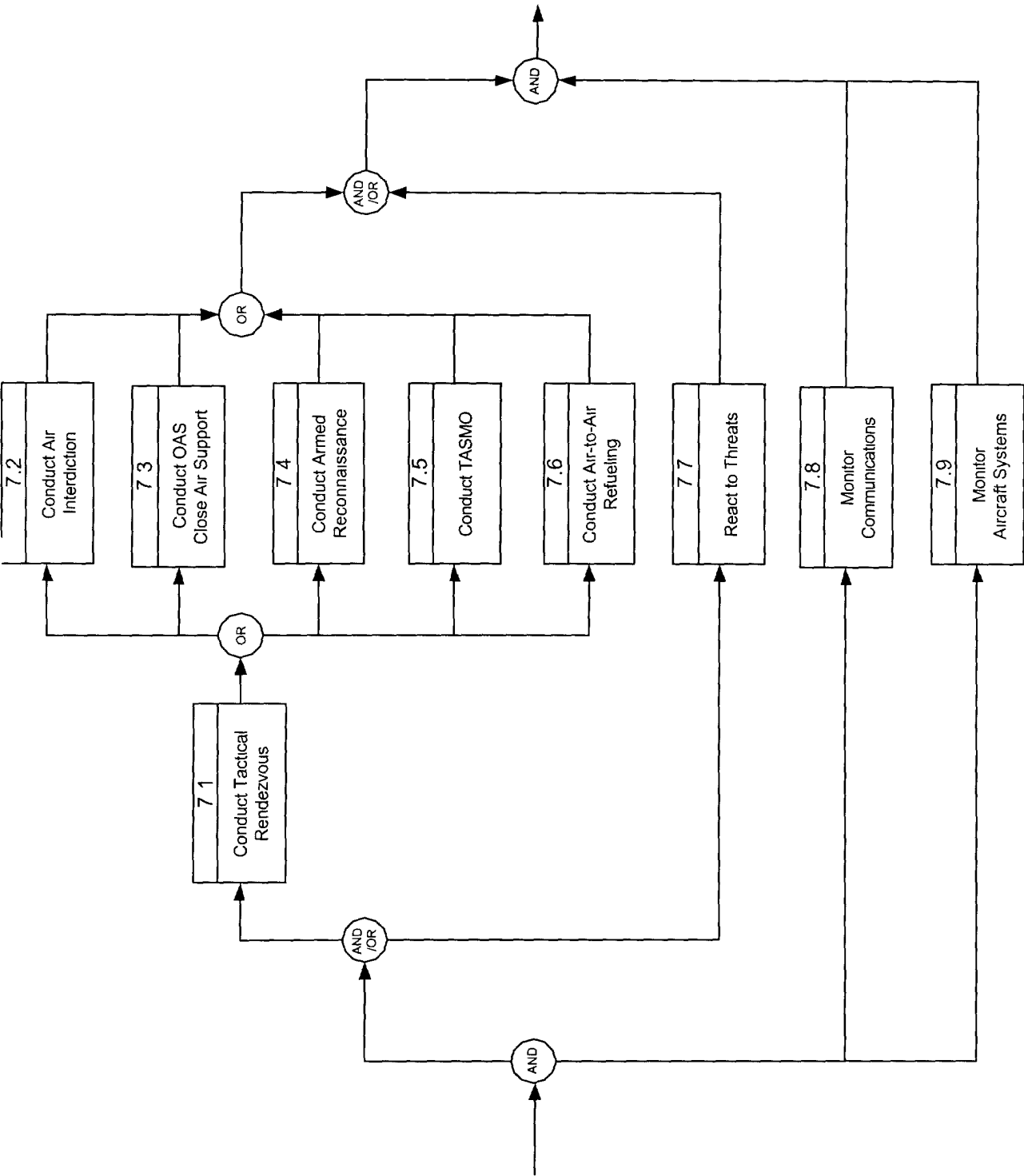
SRAAM	Short Range Air-to-Air Missile
STT	Single Target Track
SVs	space vehicles
TAOC	Tactical Air Operations Centre
TCCCS	Tactical Command, Control and Communication System
TRP	Tactical Rendezvous Point
TWS	Track While Scan
UFC	Up-Front Controller
UN	United Nations
USMC	United States Marine Corps
USN	United States Navy
VACQ	Vertical Acquisition Modes
VS	Velocity Search
WACQ	Wide Acquisition
WYSIWYG	What You See Is What You Get
XEFZ	Xarian Economic and Fishing Zone
YFR	Yearly Flying Rate

# **Annex B**

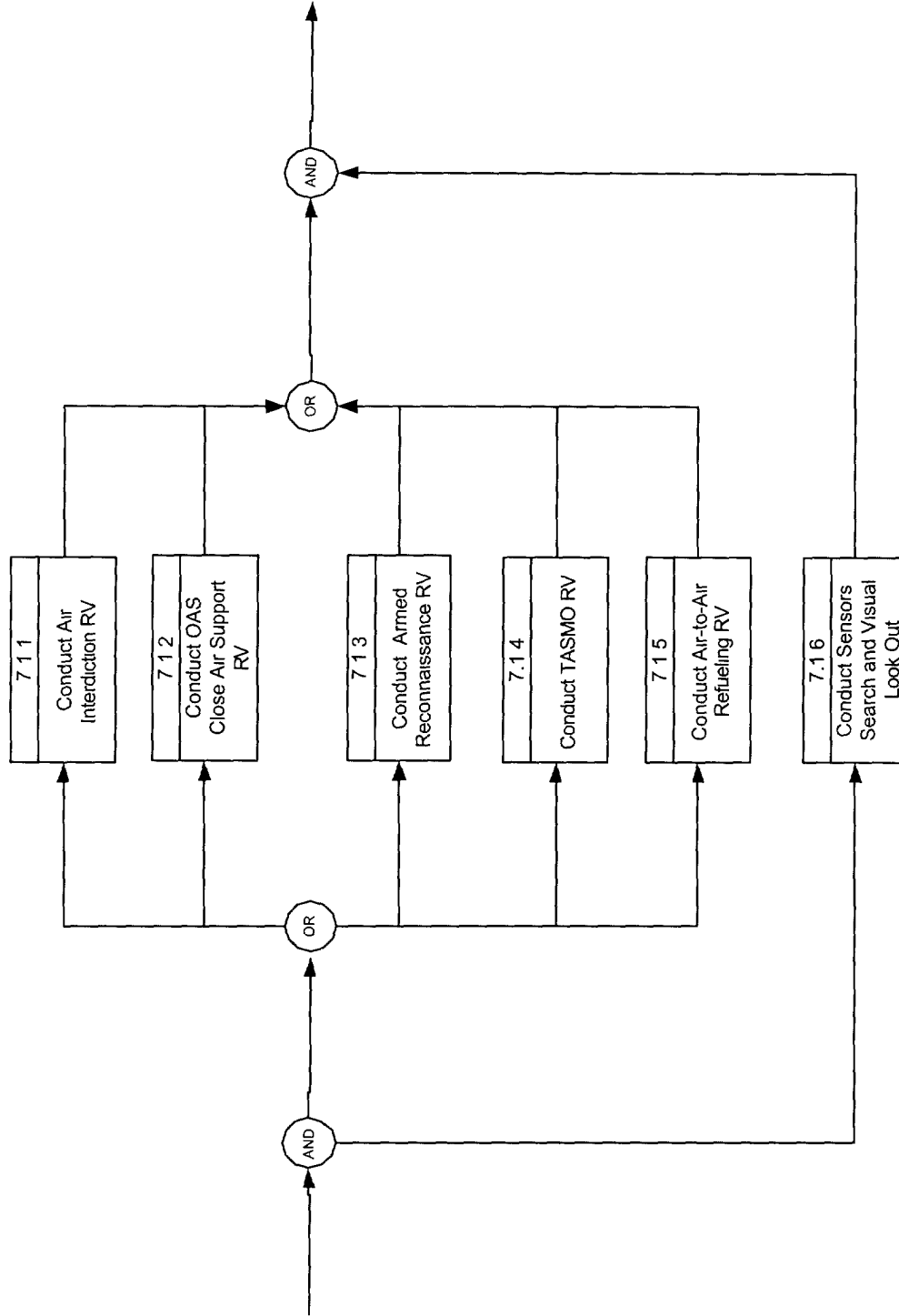
## **Function Flow Diagrams**



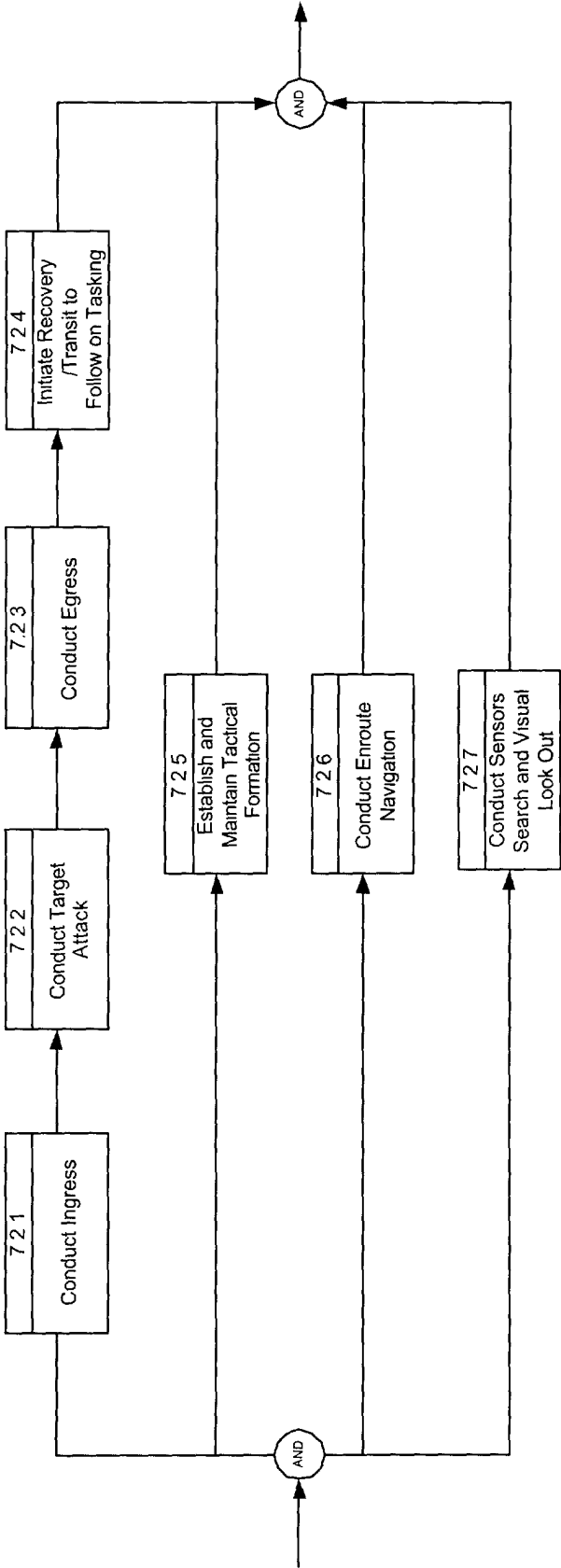
CF188 Top Level



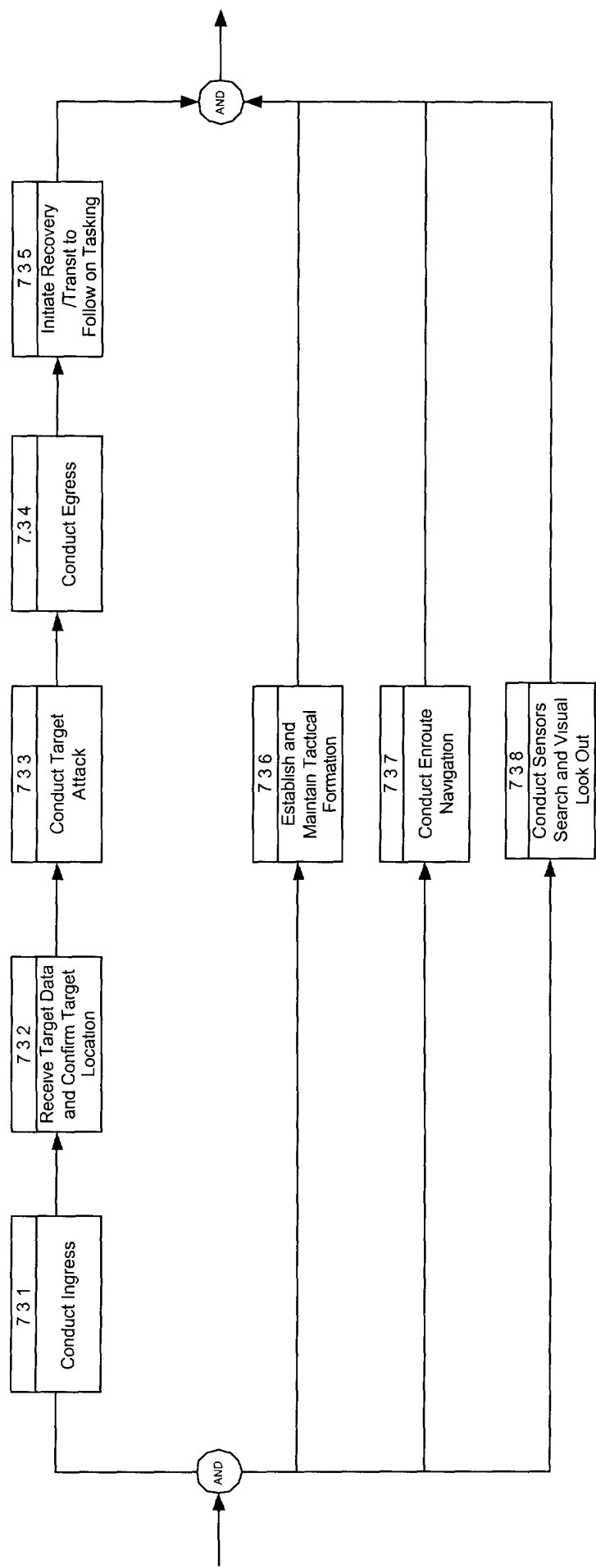
Section 7 Conduct Anti-Surface Mission



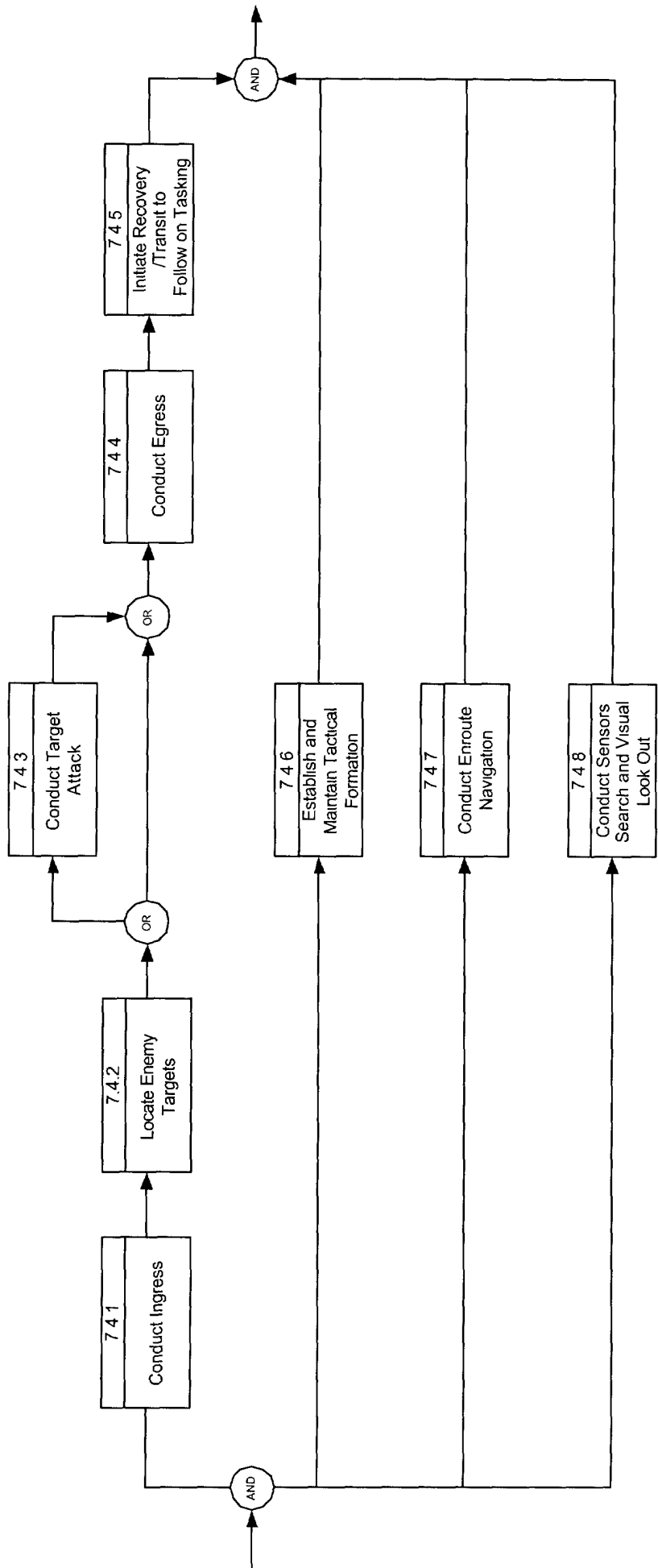
## Segment 7.1 Conduct Tactical Rendezvous



Segment 7.2 Conduct Air Interdiction

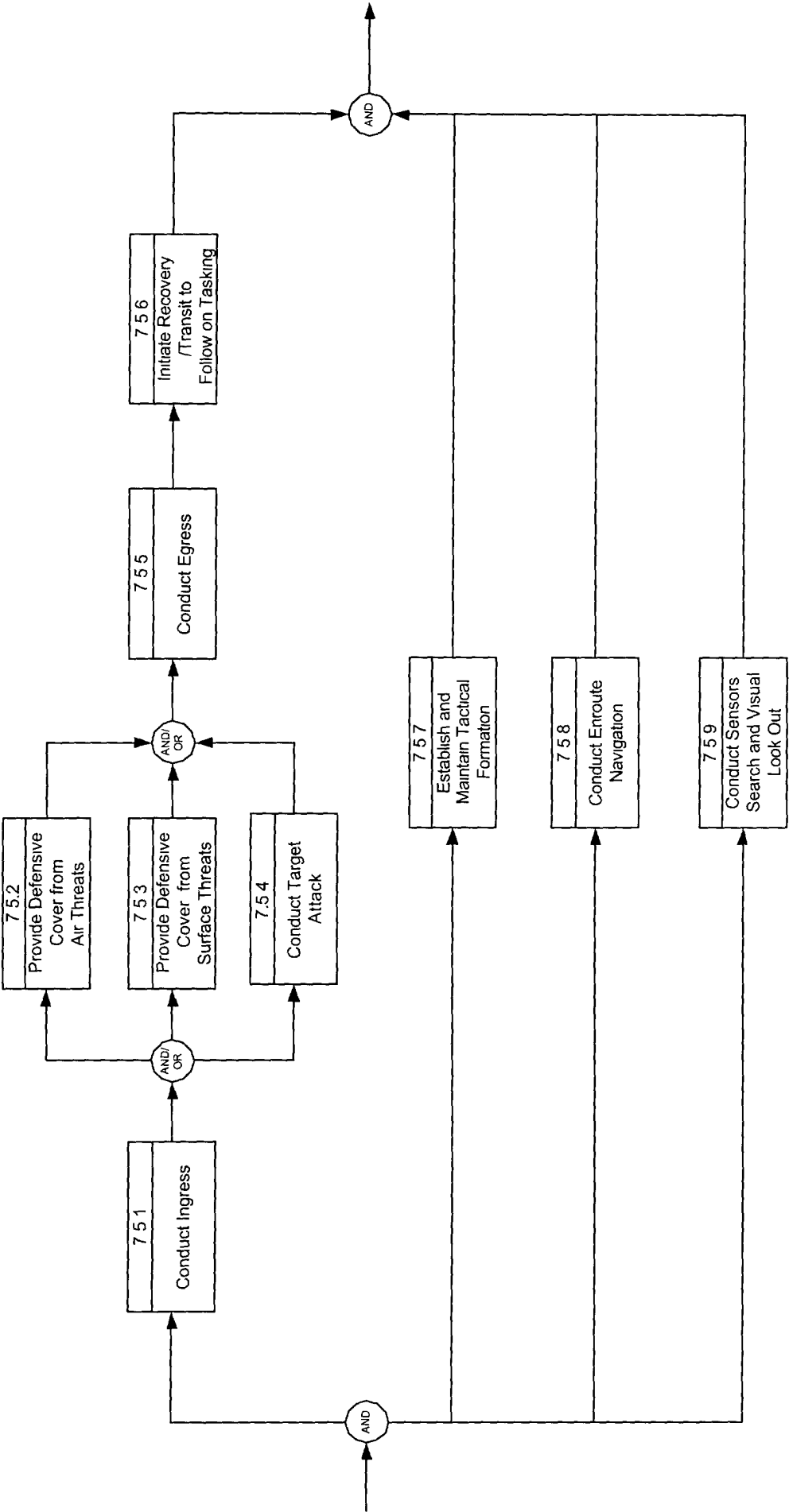


Segment 7.3 Conduct OAS Close Air Support

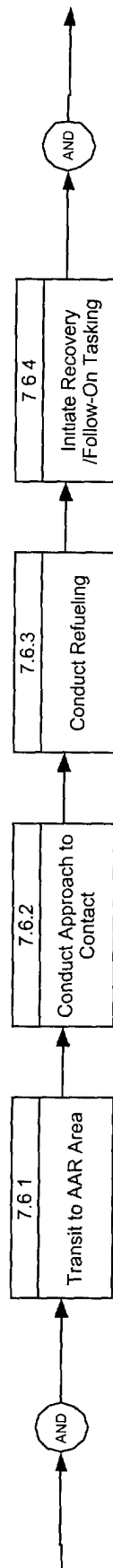


Segment 7.4 Conduct Armed Reconnaissance

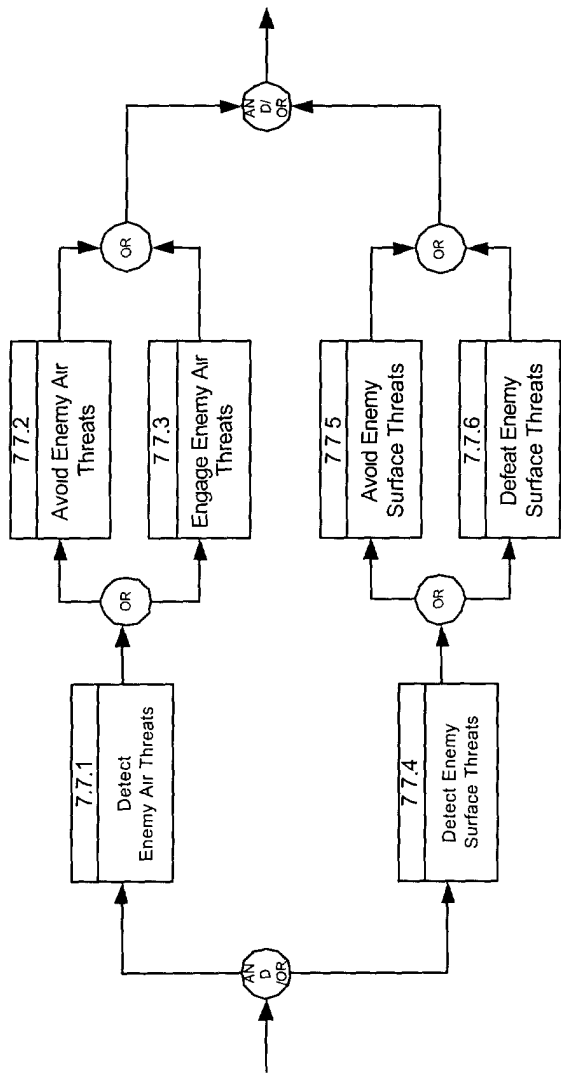




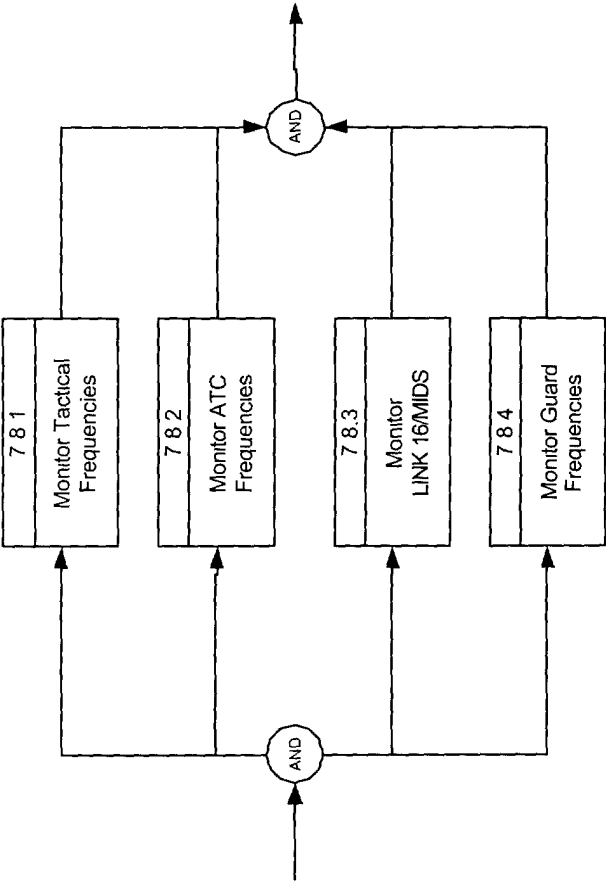
Segment 7.5 Conduct Tactical Air Support of Maritime Operations (TASMO)



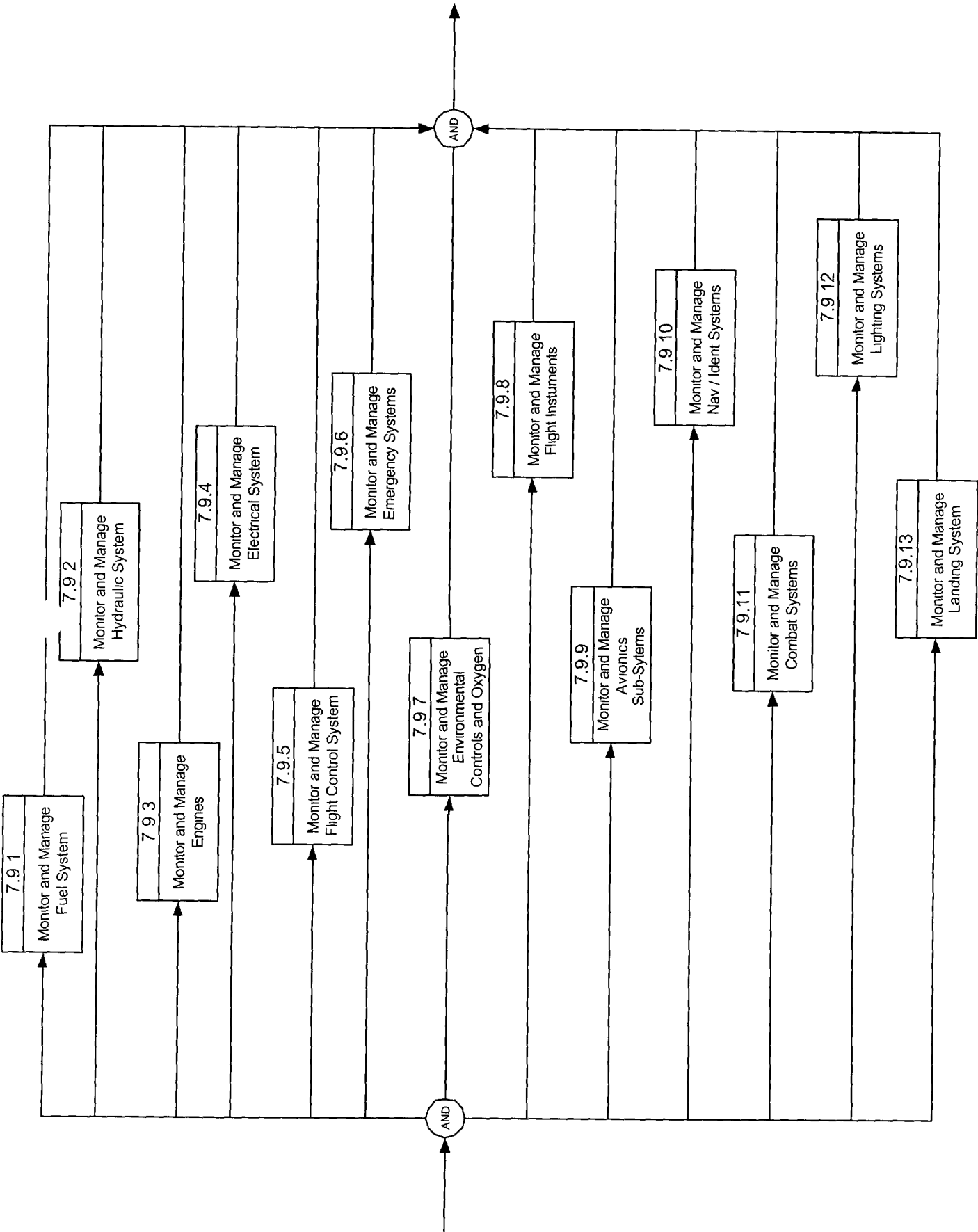
## Segment 7.6 Conduct Air-to-Air Refueling



7.7 React to Threats



Segment 7.8 Monitor Communications



Segment 7.9 Monitor and Manage Aircraft Systems

# **Annex C**

## **Goal Inventory**

## Annex C - CF18 Air to Ground Goal Inventory

<b>7</b>	<b>Conduct Anti-Surface Mission</b>	
<b>7.1</b>	<b>Conduct Tactical Rendezvous</b>	
<b>7.1.1</b>	<b>Conduct Air Interdiction RV</b>	
<b>7.1.1.1</b>	<b>Establish Hold at TRP</b>	
	7.1.1.1(a)	7.1.1.1(a) Identify TRP
	7.1.1.1(b)	7.1.1.1(b) Conduct TRP Hold
	7.1.1.1(c)	7.1.1.1(c) Search for TRP
<b>7.1.1.2</b>	<b>Establish Contact</b>	
	7.1.1.2(a)	7.1.1.2(a) Establish Radar Contact with Other Mission Elements
	7.1.1.2(b)	7.1.1.2(b) Establish Communications with Other Mission Elements
	7.1.1.2(c)	7.1.1.2(c) Establish Communications with Controlling Agency
	7.1.1.2(d)	7.1.1.2(d) Get Tactical Update and Area Brief
	7.1.1.2(e)	7.1.1.2(e) Confirm Friendly Force and Adversary Disposition on LINK 16/MI
	7.1.1.2(f)	7.1.1.2(f) Establish Visual Contact with Other Mission Elements
	7.1.1.2(g)	7.1.1.2(g) Establish AMIRS Contact with Other Mission Elements
	7.1.1.2(h)	7.1.1.2(h) Establish NVG Contact with Other Mission Elements
<b>7.1.1.3</b>	<b>Conduct RV</b>	
	7.1.1.3(a)	7.1.1.2(a) Establish Radar Contact with Other Formation Members
	7.1.1.3(b)	7.1.1.2(b) Establish Communications with Other Formation Members
	7.1.1.3(c)	7.1.1.3(c) Conduct Formation Join-up
	7.1.1.3(d)	7.1.1.3(d) Confirm Formation Position on LINK 16/MIDS Tactical Displays
	7.1.1.3(e)	7.1.1.2(f) Establish Visual Contact with Other Formation Members
	7.1.1.3(f)	7.1.1.2(g) Establish AMIRS Contact with Other Formation Members
	7.1.1.3(g)	7.1.1.2(h) Establish NVG Contact with Other Formation Members
	7.1.1.3(h)	7.2.5.1(b) Maintain Aircraft Control and Flight Position
<b>7.1.2</b>	<b>Conduct OAS Close Air Support RV</b>	
<b>7.1.2.1</b>	<b>Establish Contact</b>	
	7.1.2.1(a)	7.1.1.2(a) Establish Radar Contact with Other Mission Elements
	7.1.2.1(b)	7.1.1.2(c) Establish Communications with Controlling Agency (ABCCC/AWA)
	7.1.2.1(c)	7.1.1.2(b) Establish Communications with Forward Air Controller (FAC)
	7.1.2.1(d)	7.1.1.2(d) Get Tactical Update and Area Brief
	7.1.2.1(e)	7.1.2.1(e) Get Initial Target Brief
	7.1.2.1(f)	7.1.1.2(f) Establish Visual Contact with Other Mission Elements
	7.1.2.1(g)	7.1.1.2(g) Establish AMIRS Contact with Other Mission Elements
	7.1.2.1(h)	7.1.1.2(h) Establish NVG Contact with Other Mission Elements
<b>7.1.2.2</b>	<b>Conduct RV</b>	
	7.1.2.2(a)	7.1.1.2(a) Establish Radar Contact with Other Formation Members

7.1.2.2(b)	7.1.1.2(b)	Establish Communications with Other Formation Members
7.1.2.2(c)	7.1.1.3(c)	Conduct Formation Join-up
7.1.2.2(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays
7.1.2.2(e)	7.1.1.2(f)	Establish Visual Contact with Other Formation Members
7.1.2.2(f)	7.1.1.2(g)	Establish AMIRS Contact with Other Formation Members
7.1.2.2(g)	7.1.1.2(h)	Establish NVG Contact with Other Formation Members
7.1.2.2(h)	7.2.5.1(b)	Maintain Aircraft Control and Flight Position
<b>7.1.3</b>	<b>Conduct Armed Reconnaissance RV</b>	
<b>7.1.3.1</b>	<b>Establish Hold at TRP</b>	
7.1.3.1(a)	7.1.1.1(a)	Identify TRP
7.1.3.1(b)	7.1.1.1(b)	Establish TRP Hold
7.1.3.1(c)	7.1.1.1(c)	Search for TRP
<b>7.1.3.2</b>	<b>Establish Contact</b>	
7.1.3.2(a)	7.1.1.2(a)	Establish Radar Contact with Other Mission Elements
7.1.3.2(b)	7.1.1.2(b)	Establish Communications with Other Mission Elements
7.1.3.2(c)	7.1.1.2(c)	Establish Communications with Controlling Agency
7.1.3.2(d)	7.1.1.2(d)	Get Tactical Update and Area Brief
7.1.3.2(e)	7.1.1.2(e)	Confirm Friendly Force and Adversary Disposition on LINK 16/MI
7.1.3.2(f)	7.1.1.2(f)	Establish Visual Contact with Other Mission Elements
7.1.3.2(g)	7.1.1.2(g)	Establish AMIRS Contact with Other Mission Elements
7.1.3.2(h)	7.1.1.2(h)	Establish NVG Contact with Other Mission Elements
<b>7.1.3.3</b>	<b>Conduct RV</b>	
7.1.3.3(a)	7.1.1.2(a)	Establish Radar Contact with Other Formation Members
7.1.3.3(b)	7.1.1.2(b)	Establish Communications with Other Formation Members
7.1.3.3(c)	7.1.1.3(c)	Conduct Formation Join-up
7.1.3.3(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays
7.1.3.3(e)	7.1.1.2(f)	Establish Visual Contact with Other Formation Members
7.1.3.3(f)	7.1.1.2(g)	Establish AMIRS Contact with Other Formation Members
7.1.3.3(g)	7.1.1.2(h)	Establish NVG Contact with Other Formation Members
7.1.3.3(h)	7.2.5.1(b)	Maintain Aircraft Control and Flight Position
<b>7.1.4</b>	<b>Conduct TASMO RV</b>	
<b>7.1.4.1</b>	<b>Establish Contact</b>	
7.1.4.1(a)	7.1.1.2(a)	Establish Radar Contact with Other Mission Elements
7.1.4.1(b)	7.1.1.2(b)	Establish Communications with Other Mission Elements
7.1.4.1(c)	7.1.4.1(c)	Conduct Weapons Check-In with Controlling Agency
7.1.4.1(d)	7.1.1.2(d)	Get Tactical Update and Area Brief
7.1.4.1(e)	7.1.1.2(e)	Confirm Friendly Force and Adversary Disposition on Link 16/MID
7.1.4.1(f)	7.1.4.1(f)	Confirm Positive Radar Identification by Naval Controlling Agency



7.1.4.1(g)	7.1.1.2(f)	Establish Visual Contact with Other Mission Elements
7.1.4.1(h)	7.1.1.2(g)	Establish AMIRS Contact with Other Mission Elements
7.1.4.1(i)	7.1.1.2(h)	Establish NVG Contact with Other Mission Elements
<b>7.1.4.2</b>	<b>Conduct RV</b>	
7.1.4.2(a)	7.1.1.2(a)	Establish Radar Contact with Other Formation Members
7.1.4.2(b)	7.1.1.2(b)	Establish Communications with Other Formation Members
7.1.4.2(c)	7.1.1.3(c)	Conduct Formation Join-up
7.1.4.2(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays
7.1.4.2(e)	7.1.4.2(e)	Establish Radar Contact with Naval Ships
7.1.4.2(f)	7.1.4.2(f)	Deploy to CAP
7.1.4.2(g)	7.1.4.2(g)	Establish Visual Contact with Naval Ships
7.1.4.2(h)	7.1.1.2(g)	Establish AMIRS Contact with Other Formation Members
7.1.4.2(i)	7.1.4.2(i)	Establish AMIRS Contact with Naval Ships
7.1.4.2(j)	7.1.1.2(f)	Establish Visual Contact with Other Formation Members
7.1.4.2(k)	7.1.1.2(h)	Establish NVG Contact with Other Formation Members
7.1.4.2(l)	7.1.4.2(l)	Establish NVG Contact with Naval Ships
7.1.4.2(m)	7.2.5.1(b)	Maintain Aircraft Control and Flight Position
<b>7.1.5</b>	<b>Conduct Air-to Air Refueling RV</b>	
<b>7.1.5.1</b>	<b>Establish Contact</b>	
7.1.5.1(a)	7.1.1.2(e)	Confirm Friendly Force and Adversary Disposition on LINK 16/MI
7.1.5.1(b)	7.1.5.1(b)	Establish Radar Contact with AAR
7.1.5.1(c)	7.1.5.1(c)	Establish Communications with AAR
7.1.5.1(d)	7.1.5.1(d)	Conduct Pre AAR RV Checks
7.1.5.1(e)	7.1.5.1(e)	Establish Visual Contact with AAR
7.1.5.1(f)	7.1.5.1(f)	Establish AMIRS Contact With AAR
7.1.5.1(g)	7.1.5.1(g)	Establish NVG Contact with AAR
<b>7.1.5.2</b>	<b>Conduct Formation Join Up</b>	
7.1.5.2(a)	7.1.5.2(a)	Conduct AAR Sensors to Visual Intercept
7.1.5.2(b)	7.1.5.2(b)	Adopt AAR Towline Waiting Position
7.1.5.2(c)	7.1.5.2(c)	Join In Echelon Position
7.1.5.2(d)	7.1.5.2(d)	Position Astern AAR Hoses
7.1.5.2(e)	7.1.5.2(e)	Conduct Pre-Contact AAR Checks
7.1.5.2(f)	7.1.5.2(f)	Conduct AAR Sensors to NVG Intercept
7.1.5.2(g)	7.2.5.1(b)	Maintain Aircraft Control and Flight Position
<b>7.1.6</b>	<b>Conduct Sensors Search and Visual Look Out</b>	
<b>7.1.6.1</b>	<b>Conduct Radar Search and Surveillance</b>	
7.1.6.1(a)	7.2.7.1(a)	Monitor and Maintain Assigned Radar Sensor Search Parameters
7.1.6.1(b)	7.2.7.1(b)	Monitor and Maintain Radar Contact with Formation Members

7.1.6.1(c)	7.2.7.1(c)	Monitor and Maintain Radar Contact with Lateral Mission Elements
7.1.6.1(d)	7.2.7.1(d)	Monitor and Maintain Radar Contact with Unknowns
7.1.6.1(e)	7.2.7.1(e)	Advise on Radar Acquired Unknowns
7.1.6.1(f)	7.2.7.1(f)	Radar Sort Multiple Unknown Contacts
7.1.6.1(g)	7.2.7.1(g)	Interrogate Unknown Radar Contacts with IFF
7.1.6.1(h)	7.2.7.1(h)	Monitor Tactical Picture on LINK 16/MIDS Displays
<b>7.1.6.2</b>	<b>Conduct AMIRS Search and Surveillance</b>	
7.1.6.2(a)	7.2.7.2(a)	Monitor and Maintain Assigned AMIRS Search Parameters
7.1.6.2(b)	7.2.7.2(b)	Monitor and Maintain AMIRS Contact with Formation Members
7.1.6.2(c)	7.2.7.2(c)	Monitor and Maintain AMIRS Contact with Lateral Mission Element
7.1.6.2(d)	7.2.7.2(d)	Monitor and Maintain AMIRS Contact with Unknowns
7.1.6.2(e)	7.2.7.2(e)	Advise on AMIRS Acquired Unknowns
7.1.6.2(f)	7.2.7.2(f)	Sort Multiple Unknown Contacts with AMIRS
7.1.6.2(g)	7.2.7.2(g)	Interrogate Unknown AMIRS Contacts with IFF
<b>7.1.6.3</b>	<b>Conduct Visual Search and Surveillance</b>	
7.1.6.3(a)	7.2.7.3(a)	Maintain Visual Search Patterns
7.1.6.3(b)	7.2.7.3(b)	Monitor and Maintain Visual Contact with Formation Members
7.1.6.3(c)	7.2.7.3(c)	Monitor and Maintain Visual Contact with Lateral Mission Element
7.1.6.3(d)	7.2.7.3(d)	Monitor and Maintain Visual Contact with Unknowns
7.1.6.3(e)	7.2.7.3(e)	Advise on Visually Acquired Unknowns
7.1.6.3(f)	7.2.7.3(f)	Maintain NVG Visual Search Patterns
7.1.6.3(g)	7.2.7.3(g)	Monitor and Maintain NVG Contact with Formation Members
7.1.6.3(i)	7.2.7.3(h)	Monitor and Maintain NVG Contact with Lateral Mission Elements
7.1.6.3(j)	7.2.7.3(i)	Monitor and Maintain NVG Contact with Unknowns
<b>7.2</b>	<b>Conduct Air Interdiction</b>	
<b>7.2.1</b>	<b>Conduct Ingress</b>	
<b>7.2.1.1</b>	<b>Perform FLOT Crossing Procedures</b>	
7.2.1.1(a)	7.2.1.1(a)	Reduce Aircraft Emissions (EMCON Procedures)
7.2.1.1(b)	7.2.1.1(b)	Ingress at Low Altitude (Sophisticated Environment)
7.2.1.1(c)	7.2.1.1(c)	Ingress at Medium/High Altitude (Permissive Environment)
7.2.1.1(d)	7.2.1.1(d)	Descend to Low Altitude (Sophisticated Environment)
7.2.1.1(e)	7.2.1.1(e)	Adjust to Medium/High Altitude (Permissive Environment)
<b>7.2.2</b>	<b>Conduct Target Attack</b>	
<b>7.2.2.1</b>	<b>Conduct General Purpose (GP) Bomb Attack</b>	
7.2.2.1(a)	7.2.2.1(a)	Conduct A/G Check
7.2.2.1(b)	7.2.2.1(b)	Identify Initial Point Visually
7.2.2.1(c)	7.2.2.1(c)	Designate/Add Offset at Initial Point
7.2.2.1(d)	7.2.2.1(d)	Manoeuvre to Weapons Delivery Parameters
7.2.2.1(e)	7.2.2.1(b)	Identify Target/DMPI Visually

7.2.2.1(f)	7.2.2.1(f)	Conduct Element Split Attacks
7.2.2.1(g)	7.2.2.1(g)	Validate Weapons Solution Display
7.2.2.1(h)	7.2.2.1(h)	Deliver GP Weapons(Bombs/Rx/Cluster/Gx)
7.2.2.1(i)	7.2.2.1(i)	Conduct Safe Escape Manoeuvre
7.2.2.1(j)	7.2.2.1(j)	Conduct Frag Avoidance Manoeuvre
7.2.2.1(k)	7.2.2.1(k)	Conduct BDA
7.2.2.1(l)	7.2.2.1(l)	Conduct Coordinated Attacks with Other Aircraft/Elements/Sections
7.2.2.1(m)	7.2.2.1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays
7.2.2.1(n)	7.2.2.1(n)	Search for Initial Point
7.2.2.1(o)	7.2.2.1(o)	Search for Target
7.2.2.1(p)	7.2.2.1(p)	Identify Initial Point with NVG
7.2.2.1(q)	7.2.2.1(p)	Identify Target/DMPI with NVG
<b>7.2.2.2</b>	<b>Conduct Precision Guided Munitions (PGM) Attack</b>	
7.2.2.2(a)	7.2.2.1(a)	Conduct A/G Check
7.2.2.2(b)	7.2.2.2(b)	Designate Target Position
7.2.2.2(c)	7.2.2.2(c)	Identify Target Area with Aircraft Sensors
7.2.2.2(d)	7.2.2.1(d)	Manoeuvre to Weapons Delivery Parameters
7.2.2.2(e)	7.2.2.2(e)	Identify Target Using Map/Imagery/Onboard Sensors/LINK 16
7.2.2.2(f)	7.2.2.1(g)	Validate Weapons Solution Display
7.2.2.2(g)	7.2.2.2(g)	Deliver PGM (LGB/MAV/Adv PGM)
7.2.2.2(h)	7.2.2.2(h)	Conduct Self-Lasing LGB Delivery
7.2.2.2(i)	7.2.2.2(i)	Conduct Buddy-Lasing LGB Delivery
7.2.2.2(j)	7.2.2.2(j)	Update Target Designation
7.2.2.2(k)	7.2.2.1(i)	Conduct Safe Escape Manoeuvre
7.2.2.2(l)	7.2.2.1(k)	Conduct BDA
7.2.2.2(m)	7.2.2.1(l)	Conduct Coordinated Attacks with Other Aircraft/Elements/Sections
7.2.2.2(n)	7.2.2.1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays
7.2.2.2(o)	7.2.2.1(j)	Conduct Frag Avoidance Manoeuvre
<b>7.2.3</b>	<b>Conduct Egress</b>	
<b>7.2.3.1</b>	<b>Perform Formation Rejoin</b>	
7.2.3.1(a)	7.1.1.2(a)	Establish Radar Contact with Other Formation Members
7.2.3.1(b)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays
7.2.3.1(c)	7.1.1.3(c)	Conduct Formation Join-up
7.2.3.1(d)	7.1.1.2(f)	Establish Visual Contact with Other Formation Members
7.2.3.1(e)	7.1.1.2(g)	Establish AMIRS Contact with Other Formation Members
7.2.3.1(f)	7.1.1.2(h)	Establish NVG Contact with Other Formation Members
<b>7.2.3.2</b>	<b>Perform FLOT Crossing Procedures</b>	
7.2.3.2(a)	7.2.1.1(a)	Allow Aircraft Emissions for Identification

7.2.3.2(b)	7.2.3.2(b)	Egress at Low Altitude
7.2.3.2(c)	7.2.3.2(c)	Egress at Medium/High Altitude
7.2.3.2(d)	7.2.3.2(d)	Conduct Lame Duck Procedures
7.2.3.2(e)	7.2.1.1(d)	Descend to Low Altitude (Sophisticated Environment)
7.2.3.2(f)	7.2.1.1(e)	Adjust to Medium/High Altitude (Permissive Environment)
<b>7.2.4</b>	<b>Initiate Recovery/Transit to Follow on Tasking</b>	
<b>7.2.4.1</b>	<b>Pass MISREP</b>	
7.2.4.1(a)	7.2.4.1(a)	Pass IFREP
<b>7.2.4.2</b>	<b>Perform Recovery Checks</b>	
7.2.4.2(a)	7.2.4.2(a)	Conduct BD Check
7.2.4.2(b)	7.2.4.2(b)	Conduct Fence Out Check
<b>7.2.5</b>	<b>Establish and Maintain Tactical Formation</b>	
<b>7.2.5.1</b>	<b>Establish Tactical Formation</b>	
7.2.5.1(a)	7.2.5.1(a)	Establish Tactical Roles - Tactical Leads and Wingmen
7.2.5.1(b)	7.2.5.1(b)	Maintain Aircraft Control and Flight Position
7.2.5.1(c)	7.2.5.1(c)	Execute Manoeuvre Turns
7.2.5.1(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays
<b>7.2.5.2</b>	<b>Maintain Tactical Formation Integrity</b>	
7.2.5.2(a)	7.2.5.2(a)	Optimize Formation for Tactical Situation
7.2.5.2(b)	7.2.5.2(b)	Maintain Visual Mutual Support
7.2.5.2(c)	7.2.5.2(c)	Maintain Positional Mutual Support
7.2.5.2(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays
7.2.5.2(e)	7.2.5.2(e)	Maintain Visual Mutual Support with NVG
7.2.5.2(f)	7.2.5.2(f)	Communicate with Formation Members via Discreet Frequency
7.2.5.2(g)	7.2.5.2(g)	Communicate with Formation Members via Data Link
<b>7.2.6</b>	<b>Conduct Enroute Navigation</b>	
<b>7.2.6.1</b>	<b>Adhere to Airspace Control Measures</b>	
7.2.6.1(a)	7.2.6.1(a)	Maintain Ground Track
7.2.6.1(b)	7.2.6.1(b)	Adhere to ACO
7.2.6.1(c)	7.2.6.1(c)	Adjust G/S to Make Tasking Timings
7.2.6.1(d)	7.2.6.1(d)	Monitor and Avoid ACO Restricted Areas
<b>7.2.6.2</b>	<b>Conduct System/Visual Navigation</b>	
7.2.6.2(a)	7.2.6.2(a)	Navigate Using Visual References
7.2.6.2(b)	7.2.6.2(b)	Navigate Using Sensors Information Displayed on HSD and DDIs
7.2.6.2(c)	7.2.6.2(c)	Perform Navigation Systems Designations/Updates
7.2.6.2(d)	7.2.6.2(d)	Employ Watch Map Ground Technique
7.2.6.2(e)	7.2.6.2(e)	Arrive at Target at Predetermined TOT
7.2.6.2(f)	7.2.6.2(f)	Navigate Using NVG Visual References
<b>7.2.6.3</b>	<b>Avoid Hazards</b>	

7.2.6.3(a)	7.2.6.3(a)	Monitor and Avoid Weather
7.2.6.3(b)	7.2.6.3(b)	Monitor and Avoid Obstacles
7.2.6.3(c)	7.2.6.3(c)	Monitor and Avoid Terrain
7.2.6.3(e)	7.2.6.3(e)	Monitor and Avoid Other Aircraft
<b>7.2.7</b>	<b>Conduct Sensors Search and Visual Look Out</b>	
<b>7.2.7.1</b>	<b>Conduct Radar Search and Surveillance</b>	
7.2.7.1(a)	7.2.7.1(a)	Monitor and Maintain Assigned Radar Sensor Search Parameters
7.2.7.1(b)	7.2.7.1(b)	Monitor and Maintain Radar Contact with Formation Members
7.2.7.1(c)	7.2.7.1(c)	Monitor and Maintain Radar Contact with Lateral Mission Elements
7.2.7.1(d)	7.2.7.1(d)	Monitor and Maintain Radar Contact with Unknowns
7.2.7.1(e)	7.2.7.1(e)	Advise on Radar Acquired Unknowns
7.2.7.1(f)	7.2.7.1(f)	Radar Sort Multiple Unknown Contacts
7.2.7.1(g)	7.2.7.1(g)	Interrogate Unknown Radar Contacts with IFF
7.2.7.1(h)	7.2.7.1(h)	Monitor Tactical Picture on LINK 16/MIDS Displays
<b>7.2.7.2</b>	<b>Conduct AMIRS Search and Surveillance</b>	
7.2.7.2(a)	7.2.7.2(a)	Monitor and Maintain Assigned AMIRS Search Parameters
7.2.7.2(b)	7.2.7.2(b)	Monitor and Maintain AMIRS Contact with Formation Members
7.2.7.2(c)	7.2.7.2(c)	Monitor and Maintain AMIRS Contact with Lateral Mission Elements
7.2.7.2(d)	7.2.7.2(d)	Monitor and Maintain AMIRS Contact with Unknowns
7.2.7.2(e)	7.2.7.2(e)	Advise on AMIRS Acquired Unknowns
7.2.7.2(f)	7.2.7.2(f)	Sort Multiple Unknown Contacts with AMIRS
7.2.7.2(g)	7.2.7.2(g)	Interrogate Unknown AMIRS Contacts with IFF
<b>7.2.7.3</b>	<b>Conduct Visual Search and Surveillance</b>	
7.2.7.3(a)	7.2.7.3(a)	Maintain Visual Search Patterns
7.2.7.3(b)	7.2.7.3(b)	Monitor and Maintain Visual Contact with Formation Members
7.2.7.3(c)	7.2.7.3(c)	Monitor and Maintain Visual Contact with Lateral Mission Element
7.2.7.3(d)	7.2.7.3(d)	Monitor and Maintain Visual Contact with Unknowns
7.2.7.3(e)	7.2.7.3(e)	Advise on Visually Acquired Unknowns
7.2.7.3(f)	7.2.7.3(f)	Maintain NVG Visual Search Patterns
7.2.7.3(g)	7.2.7.3(g)	Monitor and Maintain NVG Contact with Formation Members
7.2.7.3(h)	7.2.7.3(h)	Monitor and Maintain NVG Contact with Lateral Mission Elements
7.2.7.3(i)	7.2.7.3(i)	Monitor and Maintain NVG Contact with Unknowns
<b>7.3</b>	<b>Conduct OAS Close Air Support</b>	
<b>7.3.1</b>	<b>Conduct Ingress</b>	
<b>7.3.1.1</b>	<b>Perform FLOT Crossing Procedures</b>	
7.3.1.1(a)	7.2.1.1(a)	Reduce Aircraft Emissions (EMCON Procedures)
7.3.1.1(b)	7.2.1.1(b)	Ingress at Low Altitude (Sophisticated Environment)
7.3.1.1(c)	7.2.1.1(c)	Ingress at Medium/High Altitude (Permissive Environment)
7.3.1.1(d)	7.2.1.1(d)	Descend to Low Altitude (Sophisticated Environment)

7.3.1 1(e)	7.2.1.1(e)	Adjust to Medium/High Altitude (Permissive Environment)
<b>7.3.2</b>	<b>Receive Target Data and Confirm Target Location</b>	
<b>7.3.2.1</b>	<b>Receive Target Data</b>	
7.3.2.1(a)	7.3.2.1(a)	Copy Target Brief from FAC
7.3.2.1(b)	7.3.2.1(b)	Read Back Mandatory Items to FAC
7.3.2.1(c)	7.3.2.1(c)	Enter Target Location in Aircraft database
7.3.2.1(d)	7.3.2.1(e)	Confirm Target Location and Restrictions on MAP/HSD
7.3.2.1(e)	7.3.2.1(e)	Communicate with FAC via DATA LINK 16
<b>7.3.2.2</b>	<b>Confirm Target Location</b>	
7.3.2.2(a)	7.3.2.2(a)	Receive Target Description Brief from FAC
7.3.2.2(b)	7.3.2.2(b)	Find Target Using Sensors
7.3.2.2(c)	7.3.2.2(c)	Find Target Visually
7.3.2.2(d)	7.3.2.2(d)	Communicate Target Acquired
7.3.2.2(e)	7.3.2.2(e)	Describe Target Area and Target to FAC
7.3.2.2(f)	7.3.2.2(f)	Conduct Target Run In
7.3.2.2(g)	7.3.2.1(e)	Communicate with FAC via DATA LINK 16
7.3.2.2(h)	7.3.2.2(h)	Find Target with NVG
<b>7.3.3</b>	<b>Conduct Target Attack</b>	
<b>7.3.3.1</b>	<b>Conduct General Purpose (GP) Bomb Attack</b>	
7.3.3.1(a)	7.2.2.1(a)	Conduct A/G Check
7.3.3.1(b)	7.2.2.1(b)	Identify Initial Point Visually
7.3.3.1(c)	7.2.2.1(c)	Designate/Add Offset at Initial Point
7.3.3.1(d)	7.2.2.1(d)	Manoeuvre to Weapons Delivery Parameters
7.3.3.1(e)	7.2.2.1(b)	Identify Target/DMPI Visually
7.3.3.1(f)	7.2.2.1(f)	Conduct Element Split Attacks
7.3.3.1(g)	7.2.2.1(g)	Validate Weapons Solution Display
7.3.3.1(h)	7.2.2.1(h)	Deliver GP Weapons(Bombs/Rx/Cluster/Gx)
7.3.3.1(i)	7.2.2.1(i)	Conduct Safe Escape Manoeuvre
7.3.3.1(j)	7.2.2.1(j)	Conduct Frag Avoidance Manoeuvre
7.3.3.1(k)	7.2.2.1(k)	Conduct BDA
7.3.3.1(l)	7.2.2.1(l)	Conduct Coordinated Attacks with Other Aircraft/Elements/Sections
7.3.3.1(m)	7.2.2.1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays
7.3.3.1(n)	7.2.2.1(n)	Search for Initial Point
7.3.3.1(o)	7.2.2.1(o)	Search for Target
7.3.3.1(p)	7.2.2.1(p)	Identify Initial Point with NVG
7.3.3.1(q)	7.2.2.1(p)	Identify Target/DMPI with NVG
<b>7.3.3.2</b>	<b>Conduct Precision Guided Munitions (PGM) Attack</b>	
7.3.3.2(a)	7.2.2.1(a)	Conduct A/G Check

7.3.3.2(b)	7.2.2.2(b)	Designate Target Position
7.3.3.2(c)	7.2.2.2(c)	Identify Target Area with Aircraft Sensors
7.3.3.2(d)	7.2.2.1(d)	Manoeuvre to Weapons Delivery Parameters
7.3.3.2(e)	7.2.2.2(e)	Identify Target Using Map/Imagery/Onboard Sensors/LINK 16
7.3.3.2(f)	7.2.2.1(g)	Validate Weapons Solution Display
7.3.3.2(g)	7.2.2.2(g)	Deliver PGM (LGB/MAV/Adv PGM)
7.3.3.2(h)	7.2.2.2(h)	Conduct Self-Lasing LGB Delivery
7.3.3.2(i)	7.2.2.2(i)	Conduct Buddy-Lasing LGB Delivery
7.3.3.2(j)	7.2.2.2(j)	Update Target Designation
7.3.3.2(k)	7.2.2.1(i)	Conduct Safe Escape Manoeuvre
7.3.3.2(l)	7.2.2.1(k)	Conduct BDA
7.3.3.2(m)	7.2.2.1(l)	Conduct Coordinated Attacks with Other Aircraft/Elements/Sections
7.3.3.2(n)	7.2.2.1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays
7.3.3.2(o)	7.2.2.1(j)	Conduct Frag Avoidance Manoeuvre
<b>7.3.4</b>	<b>Conduct Egress</b>	
<b>7.3.4.1</b>	<b>Perform Formation Rejoin</b>	
7.3.4.1(a)	7.1.1.2(a)	Establish Radar Contact with Other Formation Members
7.3.4.1(b)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays
7.3.4.1(c)	7.1.1.3(c)	Conduct Formation Join-up
7.3.4.1(d)	7.1.1.2(f)	Establish Visual Contact with Other Formation Members
7.3.4.1(e)	7.1.1.2(h)	Establish NVG Contact with Other Formation Members
<b>7.3.4.2</b>	<b>Perform FLOT Crossing Procedures</b>	
7.3.4.2(a)	7.2.1.1(a)	Allow Aircraft Emissions for Identification
7.3.4.2(b)	7.2.3.2(b)	Egress at Low Altitude
7.3.4.2(c)	7.2.3.2(c)	Egress at Medium/High Altitude
7.3.4.2(d)	7.2.3.2(d)	Conduct Lame Duck Procedures
7.3.4.2(e)	7.2.1.1(d)	Descend to Low Altitude (Sophisticated Environment)
7.3.4.2(f)	7.2.1.1(e)	Adjust to Medium/High Altitude (Permissive Environment)
<b>7.3.5</b>	<b>Initiate Recovery/Transit to Follow on Tasking</b>	
<b>7.3.5.1</b>	<b>Pass MISREP</b>	
7.3.5.1(a)	7.2.4.1(a)	Pass IFREP
<b>7.3.5.2</b>	<b>Perform Recovery Checks</b>	
7.3.5.2(a)	7.2.4.2(a)	Conduct BD Check
7.3.5.2(b)	7.2.4.2(b)	Conduct Fence Out Check
<b>7.3.6</b>	<b>Establish and Maintain Tactical Formation</b>	
<b>7.3.6.1</b>	<b>Establish Tactical Formation</b>	
7.3.6.1(a)	7.2.5.1(a)	Establish Tactical Roles - Tactical Leads and Wingmen
7.3.6.1(b)	7.2.5.1(b)	Maintain Aircraft Control and Flight Position
7.3.6.1(c)	7.2.5.1(c)	Execute Manoeuvre Turns

7.3.6 1(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays
<b>7.3.6.2</b>	<b>Maintain Tactical Formation and Integrity</b>	
7.3.6.2(a)	7.2.5.2(a)	Optimize Formation for Tactical Situation
7.3.6.2(b)	7.2.5.2(b)	Maintain Visual Mutual Support
7.3.6.2(c)	7.2.5.2(c)	Maintain Positional Mutual Support
7.3.6.2(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays
7.3.6.2(e)	7.2.5.2(e)	Maintain Visual Mutual Support with NVG
7.3.6.2(f)	7.2.5.2(f)	Communicate with Formation Members via Discreet frequency
7.3.6.2(g)	7.2.5.2(g)	Communicate with Formation Members via Data Link
<b>7.3.7</b>	<b>Conduct Enroute Navigation</b>	
<b>7.3.7.1</b>	<b>Adhere to Airspace Control Measures</b>	
7.3.7.1(a)	7.2.6.1(a)	Maintain Ground Track
7.3.7.1(b)	7.2.6.1(b)	Adhere to ACO
7.3.7.1(c)	7.2.6.1(c)	Adjust G/S to Make Tasking Timings
7.3.7.1(d)	7.2.6.1(d)	Monitor and Avoid ACO Restricted Areas
<b>7.3.7.2</b>	<b>Conduct System/Visual Navigation</b>	
7.3.7.2(a)	7.2.6.2(a)	Navigate Using Visual References
7.3.7.2(b)	7.2.6.2(b)	Navigate Using Sensors Information Displayed on HSD and DDIs
7.3.7.2(c)	7.2.6.2(c)	Perform Navigation Systems Designations/Updates
7.3.7.2(d)	7.2.6.2(d)	Employ Watch Map Ground Technique
7.3.7.2(e)	7.2.6.2(e)	Arrive at Target at Predetermined TOT
7.3.7.2(f)	7.2.6.2(f)	Navigate Using NVG Visual References
<b>7.3.7.3</b>	<b>Avoid Hazards</b>	
7.3.7.3(a)	7.2.6.3(a)	Monitor and Avoid Weather
7.3.7.3(b)	7.2.6.3(b)	Monitor and Avoid Obstacles
7.3.7.3(c)	7.2.6.3(c)	Monitor and Avoid Terrain
7.3.7.3(d)	7.2.6.3(e)	Monitor and Avoid Other Aircraft
<b>7.3.8</b>	<b>Conduct Sensors Search and Visual Look Out</b>	
<b>7.3.8.1</b>	<b>Conduct Radar Search and Surveillance</b>	
7.3.8.1(a)	7.2.7.1(a)	Monitor and Maintain Assigned Radar Sensor Search Parameters
7.3.8.1(b)	7.2.7.1(b)	Monitor and Maintain Radar Contact with Formation Members
7.3.8.1(c)	7.2.7.1(c)	Monitor and Maintain Radar Contact with Lateral Mission Elements
7.3.8.1(d)	7.2.7.1(d)	Monitor and Maintain Radar Contact with Unknowns
7.3.8.1(e)	7.2.7.1(e)	Advise on Radar Acquired Unknowns
7.3.8.1(f)	7.2.7.1(f)	Radar Sort Multiple Unknown Contacts
7.3.8.1(g)	7.2.7.1(h)	Monitor Tactical Picture on LINK 16/MIDS Displays
7.3.8.1(h)	7.2.7.1(g)	Interrogate Unknown Radar Contacts with IFF
<b>7.3.8.2</b>	<b>Conduct AMIRS Search and Surveillance</b>	
7.3.8.2(a)	7.2.7.2(a)	Monitor and Maintain Assigned AMIRS Search Parameters



7.3.8.2(b)	7.2.7.2(b)	Monitor and Maintain AMIRS Contact with Formation Members
7.3.8.2(c)	7.2.7.2(c)	Monitor and Maintain AMIRS Contact with Lateral Mission Element
7.3.8.2(d)	7.2.7.2(g)	Interrogate Unknown AMIRS Contacts with IFF
7.3.8.2(e)	7.2.7.2(d)	Monitor and Maintain AMIRS Contact with Unknowns
7.3.8.2(f)	7.2.7.2(e)	Advise on AMIRS Acquired Unknowns
7.3.8.2(g)	7.2.7.2(f)	Sort Multiple Unknown Contacts with AMIRS
<b>7.3.8.3</b>	<b>Conduct Visual Search and Surveillance</b>	
7.3.8.3(a)	7.2.7.3(a)	Maintain Visual Search Patterns
7.3.8.3(b)	7.2.7.3(b)	Monitor and Maintain Visual Contact with Formation Members
7.3.8.3(c)	7.2.7.3(c)	Monitor and Maintain Visual Contact with Lateral Mission Element
7.3.8.3(d)	7.2.7.3(d)	Monitor and Maintain Visual Contact with Unknowns
7.3.8.3(e)	7.2.7.3(e)	Advise on Visually Acquired Unknowns
7.3.8.3(f)	7.2.7.3(f)	Maintain NVG Visual Search Patterns
7.3.8.3(g)	7.2.7.3(g)	Monitor and Maintain NVG Contact with Formation Members
7.3.8.3(h)	7.2.7.3(h)	Monitor and Maintain NVG Contact with Lateral Mission Elements
7.3.8.3(i)	7.2.7.3(i)	Monitor and Maintain NVG Contact with Unknowns
<b>7.4</b>	<b>Conduct Armed Reconnaissance</b>	
<b>7.4.1</b>	<b>Conduct Ingress</b>	
<b>7.4.1.1</b>	<b>Perform FLOT Crossing Procedures</b>	
7.4.1.1(a)	7.2.1.1(a)	Reduce Aircraft Emissions (EMCON Procedures)
7.4.1.1(b)	7.2.1.1(b)	Ingress at Low Altitude (Sophisticated Environment)
7.4.1.1(c)	7.2.1.1(c)	Ingress at Medium/High Altitude (Permissive Environment)
7.4.1.1(d)	7.2.1.1(d)	Descend to Low Altitude (Sophisticated Environment)
7.4.1.1(e)	7.2.1.1(e)	Adjust to Medium/High Altitude (Permissive Environment)
<b>7.4.2</b>	<b>Locate Enemy Targets</b>	
<b>7.4.2.1</b>	<b>Locate Enemy Target</b>	
7.4.2.1(a)	7.4.2.1(a)	Conduct Visual Lookout
7.4.2.1(b)	7.4.2.1(b)	Respond to displayed RWR Threat Emission Information
7.4.2.1(c)	7.4.2.1(c)	Acquire Enemy Targets on LINK 16/MIDS Displays
7.4.2.1(d)	7.4.2.1(d)	Find Target with Radar Search Sort and Target Contract
7.4.2.1(e)	7.4.2.1(e)	Utilize Lateral Mission Element Tactical Information
7.4.2.1(f)	7.4.2.1(f)	Find Target with AMIRS Search Sort and Target Contract
7.4.2.1(g)	7.4.2.1(g)	Conduct Visual Lookout with NVG
<b>7.4.2.2</b>	<b>Confirm Enemy Target</b>	
7.4.2.2(a)	7.4.2.2(a)	Report Target via LINK 16/MIDS Secure Communications
7.4.2.2(b)	7.4.2.2(b)	Report Target via Have Quick II Secure Communications
7.4.2.2(c)	7.4.2.2(c)	Utilize C2 Directive and Descriptive Commentary
7.4.2.2(d)	7.4.2.2(d)	Identify Target/DMPI Visually
7.4.2.2(e)	7.4.2.2(e)	Identify Target Area with Aircraft Sensors

7.4.2.2(f)	7.2.2.2(e)	Identify Target Using Map/Imagery/Onboard Sensors/LINK 16
7.4.2.2(g)	7.2.2.1(p)	Identify Initial Point with NVG
<b>7.4.3</b>	<b>Conduct Target Attack</b>	
<b>7.4.3.1</b>	<b>Conduct General Purpose (GP) Bomb Attack</b>	
7.4.3.1(a)	7.2.2.1(b)	Identify Initial Point Visually
7.4.3.1(b)	7.2.2.1(c)	Designate/Add Offset at Initial Point
7.4.3.1(c)	7.2.2.1(a)	Conduct A/G Check
7.4.3.1(d)	7.2.2.1(d)	Manoeuvre to Weapons Delivery Parameters
7.4.3.1(e)	7.2.2.1(b)	Identify Target/DMPI Visually
7.4.3.1(f)	7.2.2.1(f)	Conduct Element Split Attacks
7.4.3.1(g)	7.2.2.1(g)	Validate Weapons Solution Display
7.4.3.1(h)	7.2.2.1(h)	Deliver GP Weapons(Bombs/Rx/Cluster/Gx)
7.4.3.1(i)	7.2.2.1(i)	Conduct Safe Escape Manoeuvre
7.4.3.1(j)	7.2.2.1(j)	Conduct Frag Avoidance Manoeuvre
7.4.3.1(k)	7.2.2.1(k)	Conduct BDA
7.4.3.1(l)	7.2.2.1(l)	Conduct Coordinated Attacks with Other Aircraft/Elements/Sections
7.4.3.1(m)	7.2.2.1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays
7.4.3.1(n)	7.2.2.1(n)	Search for Initial Point
7.4.3.1(o)	7.2.2.1(o)	Search for Target
7.4.3.1(p)	7.2.2.1(p)	Identify Initial Point with NVG
7.4.3.1(q)	7.2.2.1(p)	Identify Target/DMPI with NVG
<b>7.4.3.2</b>	<b>Conduct Precision Guided Munitions (PGM) Attack</b>	
7.4.3.2(a)	7.2.2.1(a)	Conduct A/G Check
7.4.3.2(b)	7.2.2.2(b)	Designate Target Position
7.4.3.2(c)	7.2.2.2(c)	Identify Target Area with Aircraft Sensors
7.4.3.2(d)	7.2.2.1(d)	Manoeuvre to Weapons Delivery Parameters
7.4.3.2(e)	7.2.2.2(e)	Identify Target Using Map/Imagery/Onboard Sensors/LINK 16
7.4.3.2(f)	7.2.2.1(g)	Validate Weapons Solution Display
7.4.3.2(g)	7.2.2.2(g)	Deliver PGM (LGB/MAV/Adv PGM)
7.4.3.2(h)	7.2.2.2(h)	Conduct Self-Lasing LGB Delivery
7.4.3.2(i)	7.2.2.2(i)	Conduct Buddy-Lasing LGB Delivery
7.4.3.2(j)	7.2.2.2(j)	Update Target Designation
7.4.3.2(k)	7.2.2.2(i)	Conduct Buddy-Lasing LGB Delivery
7.4.3.2(l)	7.2.2.1(k)	Conduct BDA
7.4.3.2(m)	7.2.2.1(l)	Conduct Coordinated Attacks with Other Aircraft/Elements/Sections
7.4.3.2(n)	7.2.2.1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays
7.4.3.2(o)	7.2.2.1(i)	Conduct Safe Escape Manoeuvre
7.4.3.2(p)	7.2.2.1(j)	Conduct Frag Avoidance Manoeuvre

- 7.4.4 Conduct Egress**
- 7.4.4.1 Perform Formation Rejoin**
  - 7.4.4.1(a) 7.1.1.2(a) Establish Radar Contact with Other Formation Members
  - 7.4.4.1(b) 7.1.1.3(d) Confirm Formation Position on LINK 16/MIDS Tactical Displays
  - 7.4.4.1(c) 7.1.1.3(c) Conduct Formation Join-up
  - 7.4.4.1(d) 7.1.1.2(f) Establish Visual Contact with Other Formation Members
  - 7.4.4.1(e) 7.1.1.2(h) Establish NVG Contact with Other Formation Members
- 7.4.4.2 Perform FLOT Crossing Procedures**
  - 7.4.4.2(a) 7.2.1.1(a) Allow Aircraft Emissions for Identification
  - 7.4.4.2(b) 7.2.3.2(b) Egress at Low Altitude
  - 7.4.4.2(c) 7.2.3.2(c) Egress at Medium/High Altitude
  - 7.4.4.2(d) 7.2.3.2(d) Conduct Lame Duck Procedures
  - 7.4.4.2(e) 7.2.1.1(d) Descend to Low Altitude (Sophisticated Environment)
  - 7.4.4.2(f) 7.2.1.1(e) Adjust to Medium/High Altitude (Permissive Environment)
- 7.4.5 Initiate Recovery/Transit to Follow on Tasking**
- 7.4.5.1 Pass MISREP**
  - 7.4.5.1(a) 7.2.4.1(a) Pass IFREP
- 7.4.5.2 Perform Recovery Checks**
  - 7.4.5.2(a) 7.2.4.2(a) Conduct BD Check
  - 7.4.5.2(b) 7.2.4.2(b) Conduct Fence Out Check
- 7.4.6 Establish and Maintain Formation**
- 7.4.6.1 Establish Tactical Formation**
  - 7.4.6.1(a) 7.2.5.1(a) Establish Tactical Roles - Tactical Leads and Wingmen
  - 7.4.6.1(b) 7.2.5.1(b) Maintain Aircraft Control and Flight Position
  - 7.4.6.1(c) 7.2.5.1(c) Execute Manoeuvre Turns
  - 7.4.6.1(d) 7.1.1.3(d) Confirm Formation Position on LINK 16/MIDS Tactical Displays
- 7.4.6.2 Maintain Tactical Formation Integrity**
  - 7.4.6.2(a) 7.2.5.2(a) Optimize Formation for Tactical Situation
  - 7.4.6.2(b) 7.2.5.2(b) Maintain Visual Mutual Support
  - 7.4.6.2(c) 7.2.5.2(c) Maintain Positional Mutual Support
  - 7.4.6.2(d) 7.1.1.3(d) Confirm Formation Position on LINK 16/MIDS Tactical Displays
  - 7.4.6.2(e) 7.2.5.2(e) Maintain Visual Mutual Support with NVG
  - 7.4.6.2(f) 7.2.5.2(f) Communicate with Formation Members via Discreet frequency
  - 7.4.6.2(g) 7.2.5.2(g) Communicate with Formation Members via Data Link
- 7.4.7 Conduct Enroute Navigation**
- 7.4.7.1 Adhere to Airspace Control Measures**
  - 7.4.7.1(a) 7.2.6.1(a) Maintain Ground Track
  - 7.4.7.1(b) 7.2.6.1(b) Adhere to ACO
  - 7.4.7.1(c) 7.2.6.1(c) Adjust G/S to Make Tasking Timings

7.4.7.1(d)	7.2.6.1(d)	Monitor and Avoid ACO Restricted Areas
<b>7.4.7.2</b>	<b>Conduct System/Visual Navigation</b>	
7.4.7.2(a)	7.2.6.2(a)	Navigate Using Visual References
7.4.7.2(b)	7.2.6.2(b)	Navigate Using Sensors Information Displayed on HSD and DDIs
7.4.7.2(c)	7.2.6.2(c)	Perform Navigation Systems Designations/Updates
7.4.7.2(d)	7.2.6.2(d)	Employ Watch Map Ground Technique
7.4.7.2(e)	7.2.6.2(e)	Arrive at Target at Predetermined TOT
7.4.7.2(f)	7.2.6.2(f)	Navigate Using NVG Visual References
<b>7.4.7.3</b>	<b>Avoid Hazards</b>	
7.4.7.3(a)	7.2.6.3(a)	Monitor and Avoid Weather
7.4.7.3(b)	7.2.6.3(b)	Monitor and Avoid Obstacles
7.4.7.3(c)	7.2.6.3(c)	Monitor and Avoid Terrain
7.4.7.3(d)	7.2.6.3(e)	Monitor and Avoid Other Aircraft
<b>7.4.8</b>	<b>Conduct Sensors Search and Visual Look Out</b>	
<b>7.4.8.1</b>	<b>Conduct Radar Search and Surveillance</b>	
7.4.8.1(a)	7.2.7.1(a)	Monitor and Maintain Assigned Radar Sensor Search Parameters
7.4.8.1(b)	7.2.7.1(b)	Monitor and Maintain Radar Contact with Formation Members
7.4.8.1(c)	7.2.7.1(c)	Monitor and Maintain Radar Contact with Lateral Mission Elements
7.4.8.1(d)	7.2.7.1(d)	Monitor and Maintain Radar Contact with Unknowns
7.4.8.1(e)	7.2.7.1(e)	Advise on Radar Acquired Unknowns
7.4.8.1(f)	7.2.7.1(f)	Radar Sort Multiple Unknown Contacts
7.4.8.1(g)	7.2.7.1(h)	Monitor Tactical Picture on LINK 16/MIDS Displays
7.4.8.1(h)	7.2.7.1(g)	Interrogate Unknown Radar Contacts with IFF
<b>7.4.8.2</b>	<b>Conduct AMIRS Search and Surveillance</b>	
7.4.8.2(a)	7.2.7.2(a)	Monitor and Maintain Assigned AMIRS Search Parameters
7.4.8.2(b)	7.2.7.2(b)	Monitor and Maintain AMIRS Contact with Formation Members
7.4.8.2(c)	7.2.7.2(c)	Monitor and Maintain AMIRS Contact with Lateral Mission Element
7.4.8.2(d)	7.2.7.2(g)	Interrogate Unknown AMIRS Contacts with IFF
7.4.8.2(e)	7.2.7.2(d)	Monitor and Maintain AMIRS Contact with Unknowns
7.4.8.2(f)	7.2.7.2(e)	Advise on AMIRS Acquired Unknowns
7.4.8.2(g)	7.2.7.2(f)	Sort Multiple Unknown Contacts with AMIRS
<b>7.4.8.3</b>	<b>Conduct Visual Search and Surveillance</b>	
7.4.8.3(a)	7.2.7.3(a)	Maintain Visual Search Patterns
7.4.8.3(b)	7.2.7.3(b)	Monitor and Maintain Visual Contact with Formation Members
7.4.8.3(c)	7.2.7.3(c)	Monitor and Maintain Visual Contact with Lateral Mission Element
7.4.8.3(d)	7.2.7.3(d)	Monitor and Maintain Visual Contact with Unknowns
7.4.8.3(e)	7.2.7.3(e)	Advise on Visually Acquired Unknowns
7.4.8.3(f)	7.2.7.3(f)	Maintain NVG Visual Search Patterns

7.4.8.3(g)	7.2 7.3(g)	Monitor and Maintain NVG Contact with Formation Members
7.4.8.3(h)	7.2.7.3(h)	Monitor and Maintain NVG Contact with Lateral Mission Elements
7.4.8 3(i)	7.2.7.3(i)	Monitor and Maintain NVG Contact with Unknowns
<b>7.5</b>	<b>Conduct TASMO</b>	
<b>7.5.1</b>	<b>Conduct Ingress</b>	
<b>7.5.1.1</b>	<b>Perform FLOT Crossing Procedures</b>	
7.5.1 1(a)	7.2 1.1(a)	Reduce Aircraft Emissions (EMCON Procedures)
7.5.1.1(b)	7.2.1.1(b)	Ingress at Low Altitude (Sophisticated Environment)
7 5.1.1(c)	7.2.1.1(c)	Ingress at Medium/High Altitude (Permissive Environment)
7.5.1.1(d)	7.2 1.1(d)	Descend to Low Altitude (Sophisticated Environment)
7.5 1 1(e)	7.2.1.1(e)	Adjust to Medium/High Altitude (Permissive Environment)
<b>7.5.2</b>	<b>Provide Defensive Cover for Friendly Maritime Forces (Air Threats)</b>	
<b>7.5.2.1</b>	<b>Establish CAPs</b>	
7.5.2.1(a)	7.2 5.2(a)	Optimize Formation for Tactical Situation
7.5.2 1(b)	7.5.2.1(b)	Conduct CAP
<b>7.5.2.2</b>	<b>Seek Out Enemy Air Threats</b>	
7.5.2.2(a)	7.5.2.2(a)	Employ Radar Search Sort and Target Contract
7 5.2.2(b)	7.4.2.1(a)	Conduct Visual Lookout
7.5.2 2(c)	7 4.2.1(b)	Respond to displayed RWR Threat Emission Information
7.5.2.2(d)	7 5.2.2(d)	Initiate and Monitor EID of Unknowns
7 5.2.2(e)	7.5.2.2(e)	Advise on Approaching Threats
7.5.2.2(f)	7.5.2.2(f)	Advise on Visually Acquired Threats
7.5.2.2(g)	7.5.2.2(g)	Acquire Enemy Contacts on LINK 16/MIDS Displays
7 5 2.2(h)	7.5.2.2(h)	VID Unknowns
7.5.2.2(i)	7 4.2.2(a)	Employ LINK 16/MIDS Secure Communications
7 5 2.2(j)	7.4.2.2(c)	Utilize C2 Directive and Descriptive Commentary
7.5.2.2(k)	7.4 2.1(e)	Utilize Lateral Mission Element Tactical Information
7.5.2.2(l)	7.5.2.2(l)	Employ AMIRS Search Sort and Target Contract
7.5.2.2(m)	7 2.7.1(g)	Interrogate Unknown Radar Contacts with IFF
7.5.2 2(n)	7 4 2.2(b)	Employ Have Quick II Secure Communications
7.5.2.2(o)	7.4.2.1(g)	Conduct Visual Lookout with NVG
7.5.2.2(p)	7.5.2.2(p)	VID Unknowns with NVG
<b>7.5.2.3</b>	<b>Degrade Enemy Aircraft Situational Awareness</b>	
7.5.2.3(a)	7.5.2.3(a)	Employ Tactical Deception
7.5.2 3(b)	7.5.2 3(b)	Dispense Chaff
7.5.2.3(c)	7.5.2.3(c)	Employ Jammers
7.5.2.3(d)	7.5.2.3(d)	Employ BVR Deception Tactics
<b>7.5.2.4</b>	<b>Decoy Enemy Air Threat</b>	
7.5.2.4(a)	7 5 2.4(a)	Manoeuvre/Expose the Tactical Formation

7.5.2.4(b)	7.5.2.4(b)	Illuminate Enemy Air RWR
7.5.2.4(c)	7.5.2.4(c)	Enhance Enemy Air Radar Acquisition
7.5.2.4(d)	7.5.2.4(d)	Draw Enemy Air Away
7.5.2.4(e)	7.5.2.4(e)	Negate Enemy Air Weapons Employment
<b>7.5.2.5</b>	<b>Negate Enemy Air Threat</b>	
7.5.2.5(a)	7.5.2.5(a)	Deny Enemy Air Weapons Solution
7.5.2.5(b)	7.5.2.5(b)	Negate Enemy Air Weapons Employment
7.5.2.5(c)	7.5.2.5(c)	Employ Air-to-Air RMD
7.5.2.5(d)	7.5.2.5(d)	Employ Air-to-Air IRMD
7.5.2.5(e)	7.5.2.5(e)	Employ AAGD
7.5.2.5(f)	7.5.2.5(f)	Egress Engagement Safely
7.5.2.5(g)	7.4.2.1(b)	Respond to displayed RWR Threat Emission Information
7.5.2.5(h)	7.5.2.2(g)	Acquire Enemy Contacts on LINK 16/MIDS Displays
<b>7.5.2.6</b>	<b>Conduct Air Intercept</b>	
7.5.2.6(a)	7.5.2.6(a)	Manoeuvre Aircraft to Intercept Enemy
7.5.2.6(b)	7.5.2.5(b)	Negate Enemy Air Weapons Employment
7.5.2.6(c)	7.5.2.5(a)	Deny Enemy Air Weapons Solution
<b>7.5.2.7</b>	<b>Destroy Enemy Air Threat</b>	
7.5.2.7(a)	7.5.2.7(a)	Manoeuvre to a Weapons Engagement Zone
7.5.2.7(b)	7.2.2.1(g)	Validate Weapons Solution Display
7.5.2.7(c)	7.5.2.7(c)	Employ Weapons
7.5.2.7(d)	7.5.2.7(d)	Maintain Post Attack Offensive
7.5.2.7(e)	7.5.2.5(f)	Egress Engagement Safely
7.5.2.7(f)	7.5.2.7(f)	Assess Post Merge ACM Options
7.5.2.7(g)	7.5.2.7(g)	Monitor Weapon Fly Out
<b>7.5.3</b>	<b>Provide Defensive Cover for Friendly Maritime Forces (Surface Threats)</b>	
<b>7.5.3.1</b>	<b>Seek Out Enemy Naval Surface Threats</b>	
7.5.3.1(a)	7.4.2.1(a)	Conduct Visual Lookout
7.5.3.1(b)	7.4.2.1(b)	Respond to displayed RWR Threat Emission Information
7.5.3.1(c)	7.4.2.1(c)	Acquire Enemy Targets on LINK 16/MIDS Displays
7.5.3.1(d)	7.4.2.1(d)	Find Target with Radar Search Sort and Target Contract
7.5.3.1(e)	7.4.2.1(e)	Utilize Lateral Mission Element Tactical Information
7.5.3.1(f)	7.4.2.1(f)	Find Target with AMIRS Search Sort and Target Contract
<b>7.5.3.2</b>	<b>Confirm Enemy Naval Target</b>	
7.5.3.2(a)	7.4.2.2(a)	Report Target via LINK 16/MIDS Secure Communications
7.5.3.2(b)	7.4.2.2(b)	Report Target via Have Quick II Secure Communications
7.5.3.2(c)	7.4.2.2(c)	Utilize C2 Directive and Descriptive Commentary
7.5.3.2(d)	7.2.2.1(b)	Identify Target/DMPI Visually

7.5.3.2(e)	7.2.2.2(c)	Identify Target Area with Aircraft Sensors
7.5.3.2(f)	7.2.2.2(e)	Identify Target Using Map/Imagery/Onboard Sensors/LINK 16
7.5.3.2(g)	7.2.2.1(p)	Identify Target/DMPI with NVG
<b>7.5.4</b>	<b>Conduct Target Attack</b>	
<b>7.5.4.1</b>	<b>Conduct General Purpose (GP) Bomb Attack</b>	
7.5.4.1(a)	7.2.2.1(a)	Conduct A/G Check
7.5.4.1(b)	7.2.2.1(b)	Identify Initial Point Visually
7.5.4.1(c)	7.2.2.1(c)	Designate/Add Offset at Initial Point
7.5.4.1(d)	7.2.2.1(d)	Manoeuvre to Weapons Delivery Parameters
7.5.4.1(e)	7.2.2.1(b)	Identify Target/DMPI Visually
7.5.4.1(f)	7.2.2.1(f)	Conduct Element Split Attacks
7.5.4.1(g)	7.2.2.1(g)	Validate Weapons Solution Display
7.5.4.1(h)	7.2.2.1(h)	Deliver GP Weapons(Bombs/Rx/Cluster/Gx)
7.5.4.1(i)	7.2.2.1(i)	Conduct Safe Escape Manoeuvre
7.5.4.1(j)	7.2.2.1(j)	Conduct Frag Avoidance Manoeuvre
7.5.4.1(k)	7.2.2.1(k)	Conduct BDA
7.5.4.1(l)	7.2.2.1(l)	Conduct Coordinated Attacks with Other Aircraft/Elements/Sections
7.5.4.1(m)	7.2.2.1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays
7.5.4.1(n)	7.2.2.1(n)	Search for Initial Point
7.5.4.1(o)	7.2.2.1(o)	Search for Target
7.5.4.1(p)	7.2.2.1(p)	Identify Initial Point with NVG
7.5.4.1(q)	7.2.2.1(p)	Identify Target/DMPI with NVG
<b>7.5.4.2</b>	<b>Conduct Precision Guided Munitions (PGM) Attack</b>	
7.5.4.2(a)	7.2.2.1(a)	Conduct A/G Check
7.5.4.2(b)	7.2.2.2(b)	Designate Target Position
7.5.4.2(c)	7.2.2.2(c)	Identify Target Area with Aircraft Sensors
7.5.4.2(d)	7.2.2.1(d)	Manoeuvre to Weapons Delivery Parameters
7.5.4.2(e)	7.2.2.2(e)	Identify Target Using Map/Imagery/Onboard Sensors/LINK 16
7.5.4.2(f)	7.2.2.1(g)	Validate Weapons Solution Display
7.5.4.2(g)	7.2.2.2(g)	Deliver PGM (LGB/MAV/Adv PGM)
7.5.4.2(h)	7.2.2.2(h)	Conduct Self-Lasing LGB Delivery
7.5.4.2(i)	7.2.2.2(i)	Conduct Buddy-Lasing LGB Delivery
7.5.4.2(j)	7.2.2.2(j)	Update Target Designation
7.5.4.2(k)	7.2.2.1(i)	Conduct Safe Escape Manoeuvre
7.5.4.2(l)	7.2.2.1(k)	Conduct BDA
7.5.4.2(m)	7.2.2.1(l)	Conduct Coordinated Attacks with Other Aircraft/Elements/Sections
7.5.4.2(n)	7.2.2.1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays
7.5.4.2(o)	7.2.2.1(j)	Conduct Frag Avoidance Manoeuvre

**7.5.5 Conduct Egress****7.5.5.1 Perform Formation Rejoin**

- |            |            |  |
|------------|------------|--|
| 7.5.5.1(a) | 7.1.1.2(a) | Establish Radar Contact with Other Formation Members         |
| 7.5.5.1(b) | 7.1.1.3(d) | Confirm Formation Position on LINK 16/MIDS Tactical Displays |
| 7.5.5.1(c) | 7.1.1.3(c) | Conduct Formation Join-up                                    |
| 7.5.5.1(d) | 7.1.1.2(f) | Establish Visual Contact with Other Formation Members        |
| 7.5.5.1(e) | 7.1.1.2(h) | Establish NVG Contact with Other Formation Members           |

**7.5.5.2 Perform FLOT Crossing Procedures**

- |            |            |   |
|------------|------------|---|
| 7.5.5.2(a) | 7.2.1.1(a) | Allow Aircraft Emissions for Identification             |
| 7.5.5.2(b) | 7.2.3.2(b) | Egress at Low Altitude                                  |
| 7.5.5.2(c) | 7.2.3.2(c) | Egress at Medium/High Altitude                          |
| 7.5.5.2(d) | 7.2.3.2(d) | Conduct Lane Duck Procedures                            |
| 7.5.5.2(e) | 7.2.1.1(d) | Descend to Low Altitude (Sophisticated Environment)     |
| 7.5.5.2(f) | 7.2.1.1(e) | Adjust to Medium/High Altitude (Permissive Environment) |

**7.5.6 Initiate Recovery/Transit to Follow on Tasking****7.5.6.1 Pass MISREP**

- |            |            |            |
|------------|------------|------------|
| 7.5.6.1(a) | 7.2.4.1(a) | Pass IFREP |
|------------|------------|------------|

**7.5.6.2 Perform Recovery Checks**

- |            |            |                         |
|------------|------------|-------------------------|
| 7.5.6.2(a) | 7.2.4.2(a) | Conduct BD Check        |
| 7.5.6.2(b) | 7.2.4.2(b) | Conduct Fence Out Check |

**7.5.7 Establish and Maintain Formation****7.5.7.1 Establish Tactical Formation**

- |            |            |  |
|------------|------------|--|
| 7.5.7.1(a) | 7.1.1.3(d) | Confirm Formation Position on LINK 16/MIDS Tactical Displays |
| 7.5.7.1(b) | 7.2.5.1(a) | Establish Tactical Roles - Tactical Leads and Wingmen        |
| 7.5.7.1(c) | 7.2.5.1(c) | Execute Manoeuvre Turns                                      |
| 7.5.7.1(d) | 7.2.5.1(b) | Maintain Aircraft Control and Flight Position                |
| 7.5.7.1(e) | 7.2.5.2(f) | Communicate with Formation Members via Discreet frequency    |
| 7.5.7.1(f) | 7.2.5.2(g) | Communicate with Formation Members via Data Link             |

**7.5.7.2 Maintain Tactical Formation Integrity**

- |            |            |  |
|------------|------------|--|
| 7.5.7.2(a) | 7.2.5.2(a) | Optimize Formation for Tactical Situation                    |
| 7.5.7.2(b) | 7.2.5.2(b) | Maintain Visual Mutual Support                               |
| 7.5.7.2(c) | 7.2.5.2(c) | Maintain Positional Mutual Support                           |
| 7.5.7.2(d) | 7.1.1.3(d) | Confirm Formation Position on LINK 16/MIDS Tactical Displays |
| 7.5.7.2(e) | 7.2.5.2(e) | Maintain Visual Mutual Support with NVG                      |

**7.5.8 Conduct Enroute Navigation****7.5.8.1 Adhere to Airspace Control Measures**

- |            |            |                                    |
|------------|------------|------------------------------------|
| 7.5.8.1(a) | 7.2.6.1(a) | Maintain Ground Track              |
| 7.5.8.1(b) | 7.2.6.1(b) | Adhere to ACO                      |
| 7.5.8.1(c) | 7.2.6.1(c) | Adjust G/S to Make Tasking Timings |



7.5.8.1(d)	7.2.6.1(d)	Monitor and Avoid ACO Restricted Areas
<b>7.5.8.2</b>	<b>Conduct System/Visual Navigation</b>	
7.5.8.2(a)	7.2.6.2(a)	Navigate Using Visual References
7.5.8.2(b)	7.2.6.2(b)	Navigate Using Sensors Information Displayed on HSD and DDIs
7.5.8.2(c)	7.2.6.2(c)	Perform Navigation Systems Designations/Updates
7.5.8.2(d)	7.2.6.2(d)	Employ Watch Map Ground Technique
7.5.8.2(e)	7.2.6.2(e)	Arrive at Target at Predetermined TOT
7.5.8.2(f)	7.2.6.2(f)	Navigate Using NVG Visual References
<b>7.5.8.3</b>	<b>Avoid Hazards</b>	
7.5.8.3(a)	7.2.6.3(a)	Monitor and Avoid Weather
7.5.8.3(b)	7.2.6.3(b)	Monitor and Avoid Obstacles
7.5.8.3(c)	7.2.6.3(c)	Monitor and Avoid Terrain
7.5.8.3(d)	7.2.6.3(e)	Monitor and Avoid Other Aircraft
<b>7.5.9</b>	<b>Conduct Sensors Search and Visual Look Out</b>	
<b>7.5.9.1</b>	<b>Conduct Radar Search and Surveillance</b>	
7.5.9.1(a)	7.2.7.1(d)	Monitor and Maintain Radar Contact with Unknowns
7.5.9.1(b)	7.2.7.1(e)	Advise on Radar Acquired Unknowns
7.5.9.1(c)	7.2.7.1(f)	Radar Sort Multiple Unknown Contacts
7.5.9.1(d)	7.2.7.1(a)	Monitor and Maintain Assigned Radar Sensor Search Parameters
7.5.9.1(e)	7.2.7.1(b)	Monitor and Maintain Radar Contact with Formation Members
7.5.9.1(f)	7.2.7.1(c)	Monitor and Maintain Radar Contact with Lateral Mission Elements
7.5.9.1(g)	7.2.7.1(h)	Monitor Tactical Picture on LINK 16/MIDS Displays
7.5.9.1(h)	7.2.7.1(g)	Interrogate Unknown Radar Contacts with IFF
<b>7.5.9.2</b>	<b>Conduct AMIRS Search and Surveillance</b>	
7.5.9.2(a)	7.2.7.2(a)	Monitor and Maintain Assigned AMIRS Search Parameters
7.5.9.2(b)	7.2.7.2(b)	Monitor and Maintain AMIRS Contact with Formation Members
7.5.9.2(c)	7.2.7.2(c)	Monitor and Maintain AMIRS Contact with Lateral Mission Element
7.5.9.2(d)	7.2.7.2(g)	Interrogate Unknown AMIRS Contacts with IFF
7.5.9.2(e)	7.2.7.2(d)	Monitor and Maintain AMIRS Contact with Unknowns
7.5.9.2(f)	7.2.7.2(e)	Advise on AMIRS Acquired Unknowns
7.5.9.2(g)	7.2.7.2(f)	Sort Multiple Unknown Contacts with AMIRS
<b>7.5.9.3</b>	<b>Conduct Visual Search and Surveillance</b>	
7.5.9.3(a)	7.2.7.3(a)	Maintain Visual Search Patterns
7.5.9.3(b)	7.2.7.3(b)	Monitor and Maintain Visual Contact with Formation Members
7.5.9.3(c)	7.2.7.3(c)	Monitor and Maintain Visual Contact with Lateral Mission Element
7.5.9.3(d)	7.2.7.3(d)	Monitor and Maintain Visual Contact with Unknowns
7.5.9.3(e)	7.2.7.3(e)	Advise on Visually Acquired Unknowns
7.5.9.3(f)	7.2.7.3(f)	Maintain NVG Visual Search Patterns

7.5.9.3(g)	7.2.7.3(g)	Monitor and Maintain NVG Contact with Formation Members
7.5.9.3(h)	7.2.7.3(h)	Monitor and Maintain NVG Contact with Lateral Mission Elements
7.5.9.3(i)	7.2.7.3(i)	Monitor and Maintain NVG Contact with Unknowns

## **7.6 Conduct Air-to-Air Refueling**

### **7.6.1 Transit to AAR Area**

#### **7.6.1.1 Establish Tactical Formation**

7.6.1.1(a)	7.2.5.1(a)	Establish Tactical Roles - Tactical Leads and Wingmen
7.6.1.1(b)	7.2.5.1(b)	Maintain Aircraft Control and Flight Position
7.6.1.1(c)	7.2.5.1(c)	Execute Manoeuvre Turns

#### **7.6.1.2 Maintain Tactical Formation Integrity**

7.6.1.2(a)	7.2.5.2(a)	Optimize Formation for Tactical Situation
7.6.1.2(b)	7.2.5.2(b)	Maintain Visual Mutual Support
7.6.1.2(c)	7.2.5.2(c)	Maintain Positional Mutual Support
7.6.1.2(d)	7.2.5.2(e)	Maintain Visual Mutual Support with NVG

#### **7.6.1.3 Adhere to Air Space Control Measures**

7.6.1.3(a)	7.2.6.1(a)	Maintain Ground Track
7.6.1.3(b)	7.2.6.1(b)	Adhere to ACO
7.6.1.3(c)	7.2.6.1(c)	Adjust G/S to Make Tasking Timings
7.6.1.3(d)	7.2.6.1(d)	Monitor and Avoid ACO Restricted Areas

#### **7.6.1.4 Conduct System/Visual Navigation**

7.6.1.4(a)	7.2.6.2(a)	Navigate Using Visual References
7.6.1.4(b)	7.2.6.2(b)	Navigate Using Sensors Information Displayed on HSD and DDIs
7.6.1.4(c)	7.2.6.2(c)	Perform Navigation Systems Designations/Updates
7.6.1.4(d)	7.2.6.2(d)	Employ Watch Map Ground Technique
7.6.1.4(e)	7.2.6.2(e)	Arrive at Target at Predetermined TOT
7.6.1.4(f)	7.2.6.2(f)	Navigate Using NVG Visual References

#### **7.6.1.5 Avoid Hazards**

7.6.1.5(a)	7.2.6.3(a)	Monitor and Avoid Weather
7.6.1.5(b)	7.2.6.3(b)	Monitor and Avoid Obstacles
7.6.1.5(c)	7.2.6.3(c)	Monitor and Avoid Terrain

#### **7.6.1.6 Conduct Radar Search and Surveillance**

7.6.1.6(a)	7.2.7.1(a)	Monitor and Maintain Assigned Radar Sensor Search Parameters
7.6.1.6(b)	7.2.7.1(b)	Monitor and Maintain Radar Contact with Formation Members
7.6.1.6(c)	7.2.7.1(c)	Monitor and Maintain Radar Contact with Lateral Mission Elements
7.6.1.6(d)	7.2.7.1(d)	Monitor and Maintain Radar Contact with Unknowns
7.6.1.6(e)	7.2.7.1(e)	Advise on Radar Acquired Unknowns
7.6.1.6(f)	7.2.7.1(f)	Radar Sort Multiple Unknown Contacts
7.6.1.6(g)	7.2.7.1(h)	Monitor Tactical Picture on LINK 16/MIDS Displays
7.6.1.6(h)	7.2.7.1(g)	Interrogate Unknown Radar Contacts with IFF

**7.6.1.7 Conduct AMIRS Search and Surveillance**

- |            |            |   |
|------------|------------|---|
| 7.6.1.7(a) | 7.2.7.2(a) | Monitor and Maintain Assigned AMIRS Search Parameters     |
| 7.6.1.7(b) | 7.2.7.2(b) | Monitor and Maintain AMIRS Contact with Formation Members |

**7.6.1.8 Conduct Visual Search and Surveillance**

- |            |            |  |
|------------|------------|--|
| 7.6.1.8(a) | 7.2.7.3(a) | Maintain Visual Search Patterns                                  |
| 7.6.1.8(b) | 7.2.7.3(b) | Monitor and Maintain Visual Contact with Formation Members       |
| 7.6.1.8(c) | 7.2.7.3(c) | Monitor and Maintain Visual Contact with Lateral Mission Element |
| 7.6.1.8(d) | 7.2.7.3(d) | Monitor and Maintain Visual Contact with Unknowns                |
| 7.6.1.8(e) | 7.2.7.3(e) | Advise on Visually Acquired Unknowns                             |
| 7.6.1.8(f) | 7.2.7.3(f) | Maintain NVG Visual Search Patterns                              |
| 7.6.1.8(g) | 7.2.7.3(g) | Monitor and Maintain NVG Contact with Formation Members          |
| 7.6.1.8(h) | 7.2.7.3(h) | Monitor and Maintain NVG Contact with Lateral Mission Elements   |
| 7.6.1.8(i) | 7.2.7.3(i) | Monitor and Maintain NVG Contact with Unknowns                   |

**7.6.2 Conduct Approach to Contact****7.6.2.1 Establish Closure**

- |            |            |                             |
|------------|------------|-----------------------------|
| 7.6.2.1(a) | 7.6.2.1(a) | Generate Positive Closure   |
| 7.6.2.1(b) | 7.6.2.1(b) | Maintain Positive Closure   |
| 7.6.2.1(c) | 7.6.2.1(c) | Monitor and Obey AAR Lights |

**7.6.2.2 Establish Attitude References**

- |            |            |                             |
|------------|------------|-----------------------------|
| 7.6.2.2(a) | 7.6.2.2(a) | Position Pitch Ladders      |
| 7.6.2.2(b) | 7.6.2.2(b) | Align Probe                 |
| 7.6.2.2(c) | 7.6.2.1(c) | Monitor and Obey AAR Lights |

**7.6.2.3 Move in to Contact**

- |            |            |                              |
|------------|------------|------------------------------|
| 7.6.2.3(a) | 7.6.2.3(a) | Pick Approach Reference      |
| 7.6.2.3(b) | 7.6.2.3(b) | Maintain Attitude References |
| 7.6.2.3(c) | 7.6.2.3(c) | Make Contact                 |
| 7.6.2.3(d) | 7.6.2.1(c) | Monitor and Obey AAR Lights  |

**7.6.3 Conduct Refueling****7.6.3.1 Establish Maximum Offload Rate**

- |            |            |                                |
|------------|------------|--------------------------------|
| 7.6.3.1(a) | 7.6.3.1(a) | Generate Maximum Fuel Transfer |
| 7.6.3.1(b) | 7.6.2.1(c) | Monitor and Obey AAR Lights    |

**7.6.3.2 Maintain Contact**

- |            |            |                                 |
|------------|------------|---------------------------------|
| 7.6.3.2(a) | 7.6.3.1(a) | Maintain Hose in Trail Position |
| 7.6.3.2(b) | 7.6.2.3(c) | Maintain Probe Contact          |
| 7.6.3.2(c) | 7.6.2.1(c) | Monitor and Obey AAR Lights     |

**7.6.3.3 Conduct Disconnect**

- |            |            |                              |
|------------|------------|------------------------------|
| 7.6.3.3(a) | 7.6.3.3(a) | Generate Negative Closure    |
| 7.6.3.3(b) | 7.6.2.3(b) | Maintain Attitude References |
| 7.6.3.3(c) | 7.6.3.3(c) | Move to Astern Position      |

7.6.3.3(d)	7.6.2.1(c)	Monitor and Obey AAR Lights
7.6.3.3(e)	7.6.3.3(e)	Move to Outboard / Echelon Position
<b>7.6.4</b>	<b>Initiate Recovery/Transit to Follow on Tasking</b>	
<b>7.6.4.1</b>	<b>Depart Tanker</b>	
7.6.4.1(a)	7.6.4.1(a)	Establish Departure Echelon Position
7.6.4.1(b)	7.6.4.1(b)	Request Clearance to Depart
7.6.4.1(c)	7.6.4.1(c)	Depart
<b>7.6.4.2</b>	<b>Establish Tactical Formation</b>	
7.6.4.2(a)	7.2.5.1(a)	Establish Tactical Roles - Tactical Leads and Wingmen
7.6.4.2(b)	7.2.5.1(b)	Maintain Aircraft Control and Flight Position
7.6.4.2(c)	7.2.5.1(c)	Execute Manoeuvre Turns
7.6.4.2(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays
<b>7.6.4.3</b>	<b>Maintain Tactical Formation Integrity</b>	
7.6.4.3(a)	7.2.5.2(a)	Optimize Formation for Tactical Situation
7.6.4.3(b)	7.2.5.2(b)	Maintain Visual Mutual Support
7.6.4.3(c)	7.2.5.2(c)	Maintain Positional Mutual Support
7.6.4.3(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays
7.6.4.3(e)	7.2.5.2(e)	Maintain Visual Mutual Support with NVG
<b>7.6.4.4</b>	<b>Adhere to Air Space Control Measures</b>	
7.6.4.4(a)	7.2.6.1(a)	Maintain Ground Track
7.6.4.4(b)	7.2.6.1(b)	Adhere to ACO
7.6.4.4(c)	7.2.6.1(c)	Adjust G/S to Make Tasking Timings
7.6.4.4(d)	7.2.6.1(d)	Monitor and Avoid ACO Restricted Areas
<b>7.6.4.5</b>	<b>Conduct System/Visual Navigation</b>	
7.6.4.5(a)	7.2.6.2(a)	Navigate Using Visual References
7.6.4.5(b)	7.2.6.2(b)	Navigate Using Sensors Information Displayed on HSD and DDIs
7.6.4.5(c)	7.2.6.2(c)	Perform Navigation Systems Designations/Updates
7.6.4.5(d)	7.2.6.2(d)	Employ Watch Map Ground Technique
7.6.4.5(e)	7.2.6.2(e)	Arrive at Target at Predetermined TOT
7.6.4.5(f)	7.2.6.2(f)	Navigate Using NVG Visual References
<b>7.6.4.6</b>	<b>Avoid Hazards</b>	
7.6.4.6(a)	7.2.6.3(a)	Monitor and Avoid Weather
7.6.4.6(b)	7.2.6.3(b)	Monitor and Avoid Obstacles
7.6.4.6(c)	7.2.6.3(c)	Monitor and Avoid Terrain
7.6.4.6(d)	7.2.6.3(e)	Monitor and Avoid Other Aircraft
<b>7.6.4.7</b>	<b>Conduct Radar Search and Surveillance</b>	
7.6.4.7(a)	7.2.7.1(a)	Monitor and Maintain Assigned Radar Sensor Search Parameters
7.6.4.7(b)	7.2.7.1(b)	Monitor and Maintain Radar Contact with Formation Members
7.6.4.7(c)	7.2.7.1(c)	Monitor and Maintain Radar Contact with Lateral Mission Elements

7.6.4.7(d)	7.2.7.1(d)	Monitor and Maintain Radar Contact with Unknowns
7.6.4.7(e)	7.2.7.1(e)	Advise on Radar Acquired Unknowns
7.6.4.7(f)	7.2.7.1(f)	Radar Sort Multiple Unknown Contacts
7.6.4.7(g)	7.2.7.1(h)	Monitor Tactical Picture on LINK 16/MIDS Displays
7.6.4.7(h)	7.2.7.1(g)	Interrogate Unknown Radar Contacts with IFF
<b>7.6.4.8</b>	<b>Conduct AMIRS Search and Surveillance</b>	
7.6.4.8(a)	7.2.7.2(a)	Monitor and Maintain Assigned AMIRS Search Parameters
7.6.4.8(b)	7.2.7.2(b)	Monitor and Maintain AMIRS Contact with Formation Members
7.6.4.8(c)	7.2.7.2(c)	Monitor and Maintain AMIRS Contact with Lateral Mission Element
7.6.4.8(d)	7.2.7.2(g)	Interrogate Unknown AMIRS Contacts with IFF
7.6.4.8(e)	7.2.7.2(d)	Monitor and Maintain AMIRS Contact with Unknowns
7.6.4.8(f)	7.2.7.2(e)	Advise on AMIRS Acquired Unknowns
7.6.4.8(g)	7.2.7.2(f)	Sort Multiple Unknown Contacts with AMIRS
<b>7.6.4.9</b>	<b>Conduct Visual Search and Surveillance</b>	
7.6.4.9(a)	7.2.7.3(a)	Maintain Visual Search Patterns
7.6.4.9(b)	7.2.7.3(b)	Monitor and Maintain Visual Contact with Formation Members
7.6.4.9(c)	7.2.7.3(c)	Monitor and Maintain Visual Contact with Lateral Mission Element
7.6.4.9(d)	7.2.7.3(d)	Monitor and Maintain Visual Contact with Unknowns
7.6.4.9(e)	7.2.7.3(e)	Advise on Visually Acquired Unknowns
7.6.4.9(f)	7.2.7.3(f)	Maintain NVG Visual Search Patterns
7.6.4.9(g)	7.2.7.3(g)	Monitor and Maintain NVG Contact with Formation Members
7.6.4.9(h)	7.2.7.3(h)	Monitor and Maintain NVG Contact with Lateral Mission Elements
7.6.4.9(i)	7.2.7.3(i)	Monitor and Maintain NVG Contact with Unknowns
<b>7.7</b>	<b>React to Threats</b>	
<b>7.7.1</b>	<b>Detect Enemy Air Threats</b>	
<b>7.7.1.1</b>	<b>Seek Out Enemy Air Threats</b>	
7.7.1.1(a)	7.5.2.2(a)	Employ Radar Search Sort and Target Contract
7.7.1.1(b)	7.4.2.1(a)	Conduct Visual Lookout
7.7.1.1(c)	7.4.2.1(b)	Respond to displayed RWR Threat Emission Information
7.7.1.1(d)	7.5.2.2(d)	EID Unknowns
7.7.1.1(e)	7.5.2.2(e)	Advise on Approaching Threats
7.7.1.1(f)	7.5.2.2(f)	Advise on Visually Acquired Threats
7.7.1.1(g)	7.5.2.2(g)	Acquire Enemy Contacts on LINK 16/MIDS Displays
7.7.1.1(h)	7.5.2.2(h)	VID Unknowns
7.7.1.1(i)	7.4.2.2(a)	Employ LINK 16/MIDS Secure Communications
7.7.1.1(j)	7.4.2.2(c)	Utilize C2 Directive and Descriptive Commentary
7.7.1.1(k)	7.4.2.1(e)	Utilize Lateral Mission Element Tactical Information
7.7.1.1(l)	7.5.2.2(l)	Employ AMIRS Search Sort and Target Contract

7.7.1 1(m)	7.2.7.1(g)	Interrogate Unknown Radar Contacts with IFF
7.7.1.1(n)	7.4.2 2(b)	Employ Have Quick II Secure Communications
7.7.1.1(o)	7.4.2.1(g)	Conduct Visual Lookout with NVG
7.7.1.1(p)	7.5.2.2(p)	VID Unknowns with NVG
<b>7.7.2</b>	<b>Avoid Enemy Air Threats</b>	
<b>7.7.2.1</b>	<b>Avoid Detection by Enemy Air Threat</b>	
7.7.2.1(a)	7.7.2 1(a)	Manoeuvre the Tactical Formation
7.7.2.1(b)	7.7.2.1(b)	Avoid Illuminating of the Enemy Air RWR
7.7.2.1(c)	7.7.2 1(c)	Configure the Tactical Formation
7.7.2.1(d)	7.7.2.1(d)	Establish Diverging Paths
7.7.2.1(e)	7.7.2.1(e)	React Aggressively to Enemy Air Manoeuvre
7.7.2.1(f)	7.7.2.1(f)	Limit Exposure Using Terrain Masking
7.7.2.1(g)	7.4.2.1(b)	Respond to displayed RWR Threat Emission Information
7.7.2.1(h)	7.5.2 2(g)	Acquire Enemy Contacts on LINK 16/MIDS Displays
<b>7.7.2.2</b>	<b>Degrade Enemy Aircraft Situational Awareness</b>	
7.7.2.2(a)	7.5.2.3(a)	Employ Tactical Deception
7.7.2 2(b)	7.5.2.3(b)	Dispense Chaff
7.7.2.2(c)	7.5.2 3(c)	Employ Jammers
7.7.2.2(d)	7.5.2.3(d)	Employ BVR Deception Tactics
<b>7.7.2.3</b>	<b>Decoy Enemy Air Threat</b>	
7.7.2.3(a)	7.5.2.4(a)	Manoeuvre/Expose the Tactical Formation
7.7.2.3(b)	7.5.2.4(b)	Illuminate Enemy Air RWR
7.7.2.3(c)	7.5.2.4(c)	Enhance Enemy Air Radar Acquisition
7.7.2.3(d)	7.5.2.4(d)	Draw Enemy Air Away
7.7.2 3(e)	7.5.2.4(e)	Negate Enemy Air Weapons Employment
<b>7.7.2.4</b>	<b>Negate Enemy Air Threat</b>	
7.7.2 4(a)	7.5.2 5(a)	Deny Enemy Air Weapons Solution
7.7.2.4(b)	7.5.2.5(b)	Negate Enemy Air Weapons Employment
7.7.2.4(c)	7.5.2.5(c)	Employ Air-to-Air RMD
7.7.2.4(d)	7.5.2.5(d)	Employ Air-to-Air IRMD
7.7.2.4(e)	7.5.2.5(e)	Employ AAGD
7.7.2.4(f)	7.5.2.5(f)	Egress Engagement Safely
7.7.2.4(g)	7.4.2.1(b)	Respond to displayed RWR Threat Emission Information
7.7.2.4(h)	7.5.2.2(g)	Acquire Enemy Contacts on LINK 16/MIDS Displays
<b>7.7.3</b>	<b>Engage Enemy Air Threats</b>	
<b>7.7.3.1</b>	<b>Degrade Enemy Aircraft Situational Awareness</b>	
7.7.3.1(a)	7.5.2.3(a)	Employ Tactical Deception
7.7.3.1(b)	7.5.2.3(b)	Dispense Chaff
7.7.3.1(c)	7.5.2.3(c)	Employ Jammers

7.7.3.1(d)	7.5.2 3(d)	Employ BVR Deception Tactics
<b>7.7.3.2</b>	<b>Conduct Air Intercept</b>	
7.7.3.2(a)	7.5.2.6(a)	Manoeuvre Aircraft to Intercept Enemy
7.7.3.2(b)	7.5.2.5(b)	Negate Enemy Air Weapons Employment
7.7.3.2(c)	7.5.2.5(a)	Deny Enemy Air Weapons Solution
<b>7.7.3.3</b>	<b>Decoy Enemy Air Threat</b>	
7.7.3.3(a)	7.5.2.4(a)	Manoeuvre/Expose the Tactical Formation
7.7.3.3(b)	7.5.2.4(b)	Illuminate Enemy Air RWR
7.7.3.3(c)	7.5.2.4(c)	Enhance Enemy Air Radar Acquisition
7.7.3.3(d)	7.5.2.4(d)	Draw Enemy Air Away
7.7.3.3(e)	7.5.2.4(e)	Negate Enemy Air Weapons Employment
<b>7.7.3.5</b>	<b>Destroy Enemy Air Threat</b>	
7.7.3.5(a)	7.5.2.7(a)	Manoeuvre to a Weapons Engagement Zone
7.7.3.5(b)	7.2.2.1(g)	Validate Weapons Solution Display
7.7.3.5(c)	7.5.2.7(c)	Employ Weapons
7.7.3.5(d)	7.5.2.7(d)	Maintain Post Attack Offensive
7.7.3.5(e)	7.5.2.5(f)	Egress Engagement Safely
7.7.3.5(f)	7.5.2.7(f)	Assess Post Merge ACM Options
7.7.3.5(g)	7.5.2.7(g)	Monitor Weapon Fly Out
<b>7.7.3.6</b>	<b>Negate Enemy Air Threat</b>	
7.7.3.6(a)	7.5.2.5(a)	Deny Enemy Air Weapons Solution
7.7.3.6(b)	7.5.2.5(b)	Negate Enemy Air Weapons Employment
7.7.3.6(c)	7.5.2.5(c)	Employ Air-to-Air RMD
7.7.3.6(d)	7.5.2.5(d)	Employ Air-to-Air IRMD
7.7.3.6(e)	7.5.2.5(e)	Employ AAGD
7.7.3.6(f)	7.5.2.5(f)	Egress Engagement Safely
7.7.3.6(g)	7.4.2.1(b)	Respond to displayed RWR Threat Emission Information
7.7.3.6(h)	7.5.2.2(g)	Acquire Enemy Contacts on LINK 16/MIDS Displays
7.7.3.6(i)	7.7.3.6(i)	Jettison External Stores
<b>7.7.4</b>	<b>Detect Enemy Surface Threats</b>	
<b>7.7.4.1</b>	<b>Seek Out Enemy Surface Threats</b>	
7.7.4.1(a)	7.4.2.1(a)	Conduct Visual Lookout
7.7.4.1(b)	7.4.2.1(b)	Respond to displayed RWR Threat Emission Information
7.7.4.1(c)	7.5.2.2(g)	Acquire Enemy Contacts on LINK 16/MIDS Displays
7.7.4.1(d)	7.4.2.1(g)	Conduct Visual Lookout with NVG
7.7.4.1(e)	7.5.2.2(f)	Advise on Visually Acquired SAM/AAA
<b>7.7.5</b>	<b>Avoid Enemy Surface Threats</b>	
<b>7.7.5.1</b>	<b>Minimise Exposure</b>	
7.7.5.1(a)	7.7.5.1(a)	Employ High Speed Flight

7.7.5.1(b)	7 7 5.1(b)	Employ Low Speed Flight
7.7.5.1(c)	7.7.5.1(c)	Avoid Threat Envelopes
7.7.5.1(d)	7.2.2.1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays
<b>7.7.5.2</b>	<b>Employ DEWS</b>	
7.7.5.2(a)	7 4 2.1(b)	Analyse displayed RWR Threat Emission Information
7.7.5.2(b)	7.5.2.3(c)	Employ Jammers
7.7 5.2(c)	7.5.2.3(b)	Dispense Chaff
<b>7.7.5.3</b>	<b>Employ Environment</b>	
7.7.5.3(a)	7.7.2.1(f)	Limit Exposure Using Terrain Masking
7.7 5 3(b)	7 7 5.3(b)	Employ Atmospheric Phenomena
<b>7.7.6</b>	<b>Defeat Enemy Surface Threats</b>	
<b>7.7.6.1</b>	<b>Employ DEWS</b>	
7.7.6.1(a)	7 5 2.3(c)	Employ Jammers
7.7.6.1(b)	7.7.6.1(b)	Employ Defensive Counter Measures
<b>7.7.6.2</b>	<b>Employ Environment</b>	
7.7.6.2(a)	7.7.2.1(f)	Limit Exposure Using Terrain Masking
7.7.6.2(b)	7 7 5.3(b)	Employ Atmospheric Phenomena
<b>7.7.6.3</b>	<b>Employ Surface Threat Counter Measures</b>	
7.7.6.3(a)	7.7.6.3(a)	Employ Surface-to-Air RMD
7.7.6.3(b)	7 7 6.3(b)	Employ Surface-to-Air IRMD
7.7.6.3(c)	7.5.2.5(e)	Employ AAAD
7.7.6.3(d)	7.7.3.6(i)	Jettison External Stores
<b>7.7.6.4</b>	<b>Conduct Attack on Surface Threat</b>	
7.7.6 4(a)	7.2.2.1(a)	Conduct A/G Check
7.7.6.4(b)	7.2.2.1(b)	Identify Initial Point Visually
7.7.6.4(c)	7.2.2.1(c)	Designate/Add Offset at Initial Point
7.7 6 4(d)	7.2.2.1(d)	Manoeuvre to Weapons Delivery Parameters
7.7.6.4(e)	7.2.2.1(b)	Identify Target/DMPI Visually
7.7.6 4(f)	7.2.2.1(f)	Conduct Element Split Attacks
7.7.6.4(g)	7 2.2.1(g)	Validate Weapons Solution Display
7.7.6.4(h)	7.2.2.1(h)	Deliver GP Weapons(Bombs/Rx/Cluster/Gx)
7.7.6.4(l)	7.2.2.1(i)	Conduct Safe Escape Manoeuvre
7.7.6.4(j)	7.2.2.1(j)	Conduct Frag Avoidance Manoeuvre
7.7.6.4(k)	7.2.2.1(k)	Conduct BDA
7.7.6.4(l)	7 2.2.1(l)	Conduct Coordinated Attacks with Other Aircraft/Elements/Sections
7.7.6.4(m)	7.2.2.1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays
7.7 6.4(n)	7 2 2.2(b)	Designate Target Position
7.7.6 4(o)	7.2.2.2(c)	Identify Target Area with Aircraft Sensors
7 7 6.4(p)	7.2.2 2(e)	Identify Target Using Map/Imagery/Onboard Sensors/LINK 16



7.7.6.4(q)	7.2.2.2(g)	Deliver PGM (LGB/MAV/Adv PGM)
7.7.6.4(r)	7.2.2.2(h)	Conduct Self-Lasing LGB Delivery
7.7.6.4(s)	7.2.2.2(i)	Conduct Buddy-Lasing LGB Delivery
7.7.6.4(t)	7.2.2.2(j)	Update Target Designation
7.7.6.4(u)	7.2.2.1(i)	Conduct Safe Escape Manoeuvre
7.7.6.4(v)	7.2.2.1(n)	Search for Initial Point
7.7.6.4(w)	7.2.2.1(o)	Search for Target
7.7.6.4(x)	7.2.2.1(p)	Identify Initial Point with NVG
7.7.6.4(y)	7.2.2.1(p)	Identify Target/DMPI with NVG
7.7.6.4(z)	7.2.2.1(j)	Conduct Frag Avoidance Manoeuvre
<b>7.8</b>	<b>Monitor Communications</b>	
<b>7.8.1</b>	<b>Monitor Tactical Frequencies</b>	
<b>7.8.1.1</b>	<b>Tasks Associated with Monitor Tactical Frequencies</b>	
7.8.1.1(a)	7.8.1.1(a)	Monitor Common Secure Voice Frequencies
7.8.1.1(b)	7.8.1.1(a)	Monitor Discreet Voice Frequencies
7.8.1.1(c)	7.8.1.1(c)	Monitor Broadcast Frequencies
<b>7.8.2</b>	<b>Monitor ATC Frequencies</b>	
<b>7.8.2.1</b>	<b>Tasks Associated with Monitor ATC Frequencies</b>	
7.8.2.1(a)	7.8.1.1(a)	Monitor Secure Voice Frequencies
7.8.2.1(b)	7.8.1.1(a)	Monitor Broadcast Frequencies
7.8.2.1(c)	7.8.1.1(c)	Monitor Broadcast Frequencies
<b>7.8.3</b>	<b>Monitor LINK 16/MIDS</b>	
<b>7.8.3.1</b>	<b>Tasks Associated with Monitor Data Link</b>	
7.8.3.1(b)	7.8.3.1(b)	Monitor Secure LINK 16 Frequencies
<b>7.8.4</b>	<b>Monitor Guard Frequencies</b>	
<b>7.8.4.1</b>	<b>Tasks Associated with Monitor Guard Frequencies</b>	
7.8.4.1(a)	7.8.1.1(a)	Monitor UHF Guard Frequency and Monitoring Mode
7.8.4.1(b)	7.8.1.1(a)	Monitor AM/FM Guard Frequency and Monitoring Mode
<b>7.9</b>	<b>Monitor Aircraft Systems</b>	
<b>7.9.1</b>	<b>Monitor and Manage Fuel System</b>	
<b>7.9.1.1</b>	<b>Tasks Associated with Monitor and Manage Fuel System</b>	
7.9.1.1(a)	7.9.1.1(a)	Monitor and Manage Tank Pressurization and Vent System
7.9.1.1(b)	7.9.1.1(b)	Monitor and Manage Fuel Quantity Indicating System
7.9.1.1(c)	7.9.1.1(c)	Monitor and Manage Fuel Feed Transfer
7.9.1.1(d)	7.9.1.1(d)	Monitor and Compare Fuel Flow Indications
7.9.1.1(e)	7.9.1.1(e)	Monitor and Manage Feed Tank Level
7.9.1.1(f)	7.9.1.1(f)	Monitor and Manage Fuel LO Indication
7.9.1.1(g)	7.9.1.1(g)	Monitor and Manage Bingo Fuel
7.9.1.1(h)	7.9.1.1(h)	Monitor and Manage Tactical Fuel
<b>7.9.10</b>	<b>Monitor and Manage Nav / Ident Systems</b>	

**7.9.10.1 Tasks Associated with Monitor and Manage Nav / Ident Systems**

- 7.9.10.1(a) 7.9.10.1(a) Monitor and Manage EGI Equipment
- 7.9.10.1(b) 7.9.10.1(b) Monitor and Manage Navigation Aid Equipment

**7.9.11 Monitor and Manage Combat Systems****7.9.11.1 Tasks Associated with Monitor and Manage Combat Systems**

- 7.9.11.1(a) 7.9.11.1(a) Monitor and Manage Radar
- 7.9.11.1(b) 7.9.11.1(b) Monitor and Manage Jammers
- 7.9.11.1(d) 7.9.11.1(d) Monitor and Manage RWR
- 7.9.11.1(e) 7.9.11.1(e) Monitor and Manage AN/ALE-47
- 7.9.11.1(f) 7.9.11.1(f) Monitor and Manage IFF Interrogator/Transponder (CIT)
- 7.9.11.1(g) 7.9.11.1(g) Monitor and Manage LINK 16/MIDS
- 7.9.11.1(i) 7.9.11.1(i) Monitor and Manage Stores Management Set
- 7.9.11.1(j) 7.9.11.1(j) Monitor and Manage Weapons
- 7.9.11.1(k) 7.9.11.1(k) Monitor and Manage Have Quick II
- 7.9.11.1(l) 7.9.11.1(l) Monitor and Manage NVIS

**7.9.12 Monitor and Manage Lighting Systems****7.9.12.1 Tasks Associated with Monitor and Manage Lighting Systems**

- 7.9.12.1(a) 7.9.12.1(a) Monitor and Manage Standard Exterior Lighting
- 7.9.12.1(b) 7.9.12.1(b) Monitor and Manage Standard Interior Lighting
- 7.9.12.1(c) 7.9.12.1(c) Monitor and Manage NVG Modified Exterior Lighting
- 7.9.12.1(d) 7.9.12.1(d) Monitor and Manage NVG Modified Interior Lighting

**7.9.13 Monitor and Manage Landing System****7.9.13.1 Tasks Associated with Monitor and Manage Landing System**

- 7.9.13.1(a) 7.9.13.1(a) Monitor and Manage Landing Gear System
- 7.9.13.1(b) 7.9.13.1(b) Monitor and Manage Brake System
- 7.9.13.1(c) 7.9.13.1(c) Monitor and Manage Arresting Hook System

**7.9.2 Monitor and Manage Hydraulic System****7.9.2.1 Tasks Associated with Monitor and Manage Hydraulic System**

- 7.9.2.1(a) 7.9.2.1(a) Monitor Hydraulic 1 and 2 Pump Pressure Indicators and Reservoirs
- 7.9.2.1(b) 7.9.2.1(b) Monitor and Manage APU and Brake Accumulators

**7.9.3 Monitor and Manage Engines****7.9.3.1 Tasks Associated with Monitor and Manage Engines**

- 7.9.3.1(a) 7.9.3.1(a) Monitor and Manage Engine Performance
- 7.9.3.1(b) 7.9.3.1(b) Monitor and Manage Throttle Controls
- 7.9.3.1(c) 7.9.3.1(c) Monitor and Manage Engine Anti-Ice System
- 7.9.3.1(d) 7.9.3.1(d) Monitor and Manage Automatic Throttle Control (ATC)
- 7.9.3.1(e) 7.9.3.1(e) Monitor Inspection of Inlet Duct Doors
- 7.9.3.1(f) 7.9.3.1(f) Monitor and Manage Secondary Power Systems

**7.9.4 Monitor and Manage Electrical System****7.9.4.1 Tasks Associated with Monitor and Manage Electrical System**

7 9 4.1(a).	7 9.4.1(a).	Monitor and Manage Electrical Circuit Breakers
7.9.4.1(b)	7.9.4.1(b)	Monitor and Manage Generators
7.9.4.1(c)	7.9.4.1(c)	Monitor and Manage Transformer Rectifiers
7.9.4.1(d)	7.9.4.1(d)	Monitor and Manage Batteries
<b>7.9.5</b>	<b>Monitor and Manage Flight Control System</b>	
<b>7.9.5.1</b>	<b>Tasks Associated with Monitor and Manage Flight Control System</b>	
7.9.5.1(a)	7.9.5.1(a)	Monitor and Manage Pilot Controls
7.9.5.1(b)	7.9.5.1(b)	Monitor and Manage Primary Flight Controls
7.9.5.1(c)	7 9.5 1(c)	Monitor and Manage Secondary Flight Controls
7.9.5.1(d)	7 9.5.1(d)	Monitor and Manage FCS Status Display
7.9 5.1(e)	7.9.5.1(e)	Monitor and Manage Departure Warning Tone
7.9.5.1(f)	7.9.5.1(f)	Monitor and Manage Spin Recovery System
7.9.5.1(g)	7.9.5.1(g)	Monitor and Manage Control Augmentation System
7.9 5.1(h)	7.9.5.1(h)	Monitor and Manage Flight Control Computers (FCC)
7.9.5.1(i)	7.9.5.1(i)	Monitor and Manage CAS Backup Systems
7.9.5.1(j)	7.9.5.1(j)	Monitor and Manage Wing Fold System
7.9.5.1(k)	7 9 5.1(k)	Monitor and Manage Automatic Flight Control System
<b>7.9.6</b>	<b>Monitor and Manage Emergency Systems</b>	
<b>7.9.6.1</b>	<b>Tasks Associated with Monitor and Manage Emergency Systems</b>	
7.9.6.1(a)	7.9.6.1(a)	Monitor and Manage Warning/Caution/Advisory Lights and Display
7.9.6.1(b)	7.9.6.1(b)	Monitor and Manage Master Caution Light and Tone
7.9.6.1(c)	7 9 6 1(c)	Monitor Voice Alert System
7.9.6.1(d)	7.9.6.1(d)	Monitor and Manage GPWS
7.9.6.1(e)	7 9 6.1(e)	Monitor and Manage Fire Detection/Extinguishing System
7.9.6 1(f)	7.9.6.1(f)	Monitor and Manage Canopy System
7.9.6.1(g)	7.9.6.1(g)	Monitor and Manage Ejection Seat System
7.9.6.1(h)	7 9 6.1(h)	Monitor and Manage Life Support Systems
<b>7.9.7</b>	<b>Monitor and Manage Environmental Controls and Oxygen</b>	
<b>7.9.7.1</b>	<b>Tasks Associated with Monitor and Manage Environmental Controls and Oxygen</b>	
7.9.7.1(a)	7 9.7.1(a)	Monitor and Manage Bleed Air Systems
7.9.7.1(b)	7.9.7.1(b)	Monitor and Manage Windshield Anti-Ice and Rain Removal System
7.9.7.1(c)	7.9.7.1(c)	Monitor and Manage Avionics Cooling and Pressurization
7.9.7.1(d)	7.9.7.1(d)	Monitor and Manage Cockpit Air-Conditioning and Pressurization
<b>7.9.8</b>	<b>Monitor and Manage Flight Instruments</b>	
<b>7.9.8.1</b>	<b>Tasks Associated with Monitor and Manage Flight Instruments</b>	
7.9.8.1(a)	7.9.8.1(a)	Monitor and Manage Pitot Static System
7 9.8.1(b)	7.9.8.1(b)	Monitor and Manage Standby Instruments
7 9.8.1(c)	7.9.8 1(c)	Monitor and Manage Radar Altimeter
7.9.8.1(d)	7.9.8 1(d)	Monitor and Manage AOA Indexer

7.9.8.1(e)	7 9.8.1(e)	Monitor and Manage Clock
<b>7.9.9</b>	<b>Monitor and Manage Avionics Sub-Systems</b>	
<b>7.9.9.1</b>	<b>Tasks Associated with Monitor and Manage Avionics Sub-Systems</b>	
7.9.9.1(a)	7.9.9.1(a)	Monitor and Manage Mission Computer System
7.9.9.1(b)	7.9 9.1(b)	Monitor and Manage Cockpit Controls and Displays
7.9.9 1(c)	7 9.9.1(c)	Monitor and Manage UFC
7.9.9.7(d)	7.9.9.7(d)	Monitor and Manage CVRS
7.9.9.7(e)	7.9 9.7(e)	Monitor and Manage Digital Displays VRS

# **Annex D**

## **Goal Allocation Criteria and Weights**

## Annex D - CF18 Air to Ground Goal Allocation Criteria and Weights

---

<b>Boredom</b>	0 012
<b>Complexity</b>	0 051
<b>Computation</b>	0 031
<b>Concept of Ops</b>	0 084
<b>Data Measurement</b>	0 035
<b>Data Sensing</b>	0 057
<b>Dexterity Weight</b>	0 029
<b>Information Availability</b>	0 055
<b>Input Sensitivity</b>	0 061
<b>Intelligence</b>	0 053
<b>Memory</b>	0 055
<b>Mobility</b>	0 011
<b>Pattern Recognition</b>	0 074
<b>Power</b>	0 013
<b>Problem Solving</b>	0 057
<b>Reasoning</b>	0 066
<b>Reliability</b>	0 051
<b>Response Time</b>	0 047
<b>Situational Awareness</b>	0 059
<b>Technical Risk or Cost</b>	0 027
<b>Verbal Task</b>	0 073

# **Annex E**

## **Goal Allocation**

## Annex E - CF18 Air to Ground Goal Allocation

Goal ID	Goal Label	Weighted Sum	Allocation	Qualitative Allocation	Rationale
7 5 2 2(d)	Initiate and Monitor EID of Unknowns	-0 217	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 9 1(a)	Monitor and Manage Mission Computer System	-0 194	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 10 1(a)	Monitor and Manage EGI Equipment	-0 182	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 5 1(e)	Monitor and Manage Departure Warning Tone	-0 147	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 5 1(f)	Monitor and Manage Spin Recovery System	-0 137	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 11 1(f)	Monitor and Manage IFF Interrogator/Transponder (CIT)	-0 135	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 5 1(c)	Monitor and Manage Secondary Flight Controls	-0 133	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 5 1(b)	Monitor and Manage Primary Flight Controls	-0 133	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 5 1(h)	Monitor and Manage Flight Control Computers (FCC)	-0 133	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 2 1 1(a)	Reduce Aircraft Emissions (EMCON Procedures)	-0 132	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 6 1(a)	Monitor and Manage Warning/Caution/Advisory Lights and Displays	-0 129	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 7 1(d)	Monitor and Manage Cockpit Air-Conditioning and Pressurization	-0 123	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 6 1(e)	Monitor and Manage Fire Detection/Extinguishing System	-0 114	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 2 2 2(h)	Conduct Self-Lasing LGB Delivery	-0 108	Human		Mandatory



Goal ID	Goal Label	Weighted Sum	Allocation	Qualitative Allocation	Rationale
7 9 6 1(d)	Monitor and Manage GPWS	-0 108	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 6 1(g)	Monitor and Manage Ejection Seat System	-0 102	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 2 7 2(g)	Interrogate Unknown AMIRS Contacts with IFF	-0 102	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 2 7 1(g)	Interrogate Unknown Radar Contacts with IFF	-0 102	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 2 2.2(j)	Update Target Designation	-0 102	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 1 5 1(b)	Establish Radar Contact with AAR	-0 102	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 1 4 2(i)	Establish AMIRS Contact with Naval Ships	-0 102	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 1 1 2(g)	Establish AMIRS Contact with Other Mission Elements	-0 102	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 1 1 2(a)	Establish Radar Contact with Other Mission Elements	-0 102	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 3 1(d)	Monitor and Manage Automatic Throttle Control (ATC)	-0 100	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 5 1(i)	Monitor and Manage CAS Backup Systems	-0 086	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 5 1(g)	Monitor and Manage Control Augmentation System	-0 086	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 5 1(d)	Monitor and Manage FCS Status Display	-0 086	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 1 1(f)	Monitor and Manage Fuel LO Indication	-0 082	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 2 2 2(i)	Conduct Buddy-Lasing LGB Delivery	-0 081	Human		Mandatory

Goal ID	Goal Label	Weighted Sum	Allocation	Qualitative Allocation	Rationale
7 9 11 1(g)	Monitor and Manage LINK 16/MIDS	-0 080	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 4 1(c)	Monitor and Manage Transformer Rectifiers	-0 078	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 7 1(a)	Monitor and Manage Bleed Air Systems	-0 078	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 2 1(a)	Monitor Hydraulic 1 and 2 Pump Pressure Indicators and Reservoirs	-0 078	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 7 1(b)	Monitor and Manage Windshield Anti-Ice and Rain Removal System	-0 078	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 1 1(c)	Monitor and Manage Fuel Feed Transfer	-0 078	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 7 1(c)	Monitor and Manage Avionics Cooling and Pressurization	-0 078	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 3 1(f)	Monitor and Manage Secondary Power Systems	-0 078	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 4 1(b)	Monitor and Manage Generators	-0 078	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 4 1(d)	Monitor and Manage Batteries	-0.078	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 8 1(a)	Monitor and Manage Pitot Static System	-0 078	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 11 1(k)	Monitor and Manage Have Quick II	-0 070	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 6 1(b)	Monitor and Manage Master Caution Light and Tone	-0 068	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 1 5 1(f)	Establish AMIRS Contact With AAR	-0 067	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 6 1(h)	Monitor and Manage Life Support Systems	-0 066	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function

Goal ID	Goal Label	Weighted Sum	Allocation	Qualitative Allocation	Rationale
7 9 4 1(a)	Monitor and Manage Electrical Circuit Breakers	-0 066	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 6 1(f)	Monitor and Manage Canopy System	-0 055	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 9 1(c)	Monitor and Manage UFC	-0 051	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 8 1(d)	Monitor and Manage AOA Indexer	-0 049	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 5 2 2(g)	Acquire Enemy Contacts on LINK 16/MIDS Displays	-0 049	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 2 1(b)	Monitor and Manage APU and Brake Accumulators	-0 047	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 9 7(d)	Monitor and Manage CVRS	-0 043	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 9 7(e)	Monitor and Manage Digital Displays VRS	-0 043	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 5 1(k)	Monitor and Manage Automatic Flight Control System	-0 043	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 8 3 1(b)	Monitor Secure LINK 16 Frequencies	-0 039	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 13 1(b)	Monitor and Manage Brake System	-0 024	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 13 1(c)	Monitor and Manage Arresting Hook System	-0 024	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 11 1(d)	Monitor and Manage RWR	-0 024	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 3 1(a)	Monitor and Manage Engine Performance	-0 008	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 1 1(a)	Monitor and Manage Tank Pressurization and Vent System	-0 004	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function

Goal ID	Goal Label	Weighted Sum	Allocation	Qualitative Allocation	Rationale
7 9 1 1(b)	Monitor and Manage Jammers	-0 002	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 7 2 1(f)	Limit Exposure Using Terrain Masking	0 000	Human		Mandatory
7 2 2 2(c)	Identify Target Area with Aircraft Sensors	0 000	Human		Mandatory
7 7 5 1(b)	Employ Low Speed Flight	0 000	Human		Mandatory
7 9 5 1(a)	Monitor and Manage Pilot Controls	0 000	Human		Mandatory
7 9 3.1(e)	Monitor Inspection of Inlet Duct Doors	0 000	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 9 3 1(c)	Monitor and Manage Engine Anti-Ice System	0 000	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 3 2 2(c)	Find Target Visually	0 000	Human		Mandatory
7 5 2 7(c)	Employ Weapons	0 000	Human		Mandatory
7 2 2 2(g)	Deliver PGM (LGB/MAV/Adv PGM)	0 000	Human		Mandatory
7 5 2 5(a)	Deny Enemy Air Weapons Solution	0 000	Human		Mandatory
7 3 2 2(h)	Find Target with NVG	0 000	Human		Mandatory
7 9 3 1(b)	Monitor and Manage Throttle Controls	0 000	Human		Mandatory
7 5 2 5(b)	Negate Enemy Air Weapons Employment	0 000	Human		Mandatory
7 2 4 1(a)	Pass IFREP	0 000	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function

Goal ID	Goal Label	Weighted Sum	Allocation	Qualitative Allocation	Rationale
7 5 2 2(p)	VID Unknowns with NVG	0 000	Human		Mandatory
7 2 2 1(h)	Deliver GP Weapons(Bombs/Rx/Cluster/Gx)	0 000	Human		Mandatory
7 5 2 4(e)	Negate Enemy Air Weapons Employment	0 000	Human		Mandatory
7 5 2 2(f)	Advise on Visually Acquired Threats	0 000	Human		Mandatory
7 2 2 2(e)	Identify Target Using Map/Imagery/Onboard Sensors/LINK 16	0 000	Human		Mandatory
7 9 5 1(j)	Monitor and Manage Wing Fold System	0 000	Machine	Human	Re-Allocated by Analyst to reflect Human Role in monitoring the machine function
7 5 2 2(h)	VID Unknowns	0 000	Human		Mandatory
7 9 11 1(i)	Monitor and Manage Stores Management Set	0 002	Human		Weighted Sum
7 3 2 1(e)	Communicate with FAC via DATA LINK 16	0 011	Human		Weighted Sum
7 9 13 1(a)	Monitor and Manage Landing Gear System	0 011	Human		Weighted Sum
7 1 4 2(f)	Deploy to CAP	0 016	Human		Weighted Sum
7 1 4 2(e)	Establish Radar Contact with Naval Ships	0.023	Human		Weighted Sum
7 9 1 1(b)	Monitor and Manage Fuel Quantity Indicating System	0 023	Human		Weighted Sum
7 2 2 1(c)	Designate/Add Offset at Initial Point	0 025	Human		Weighted Sum
7 9 9 1(b)	Monitor and Manage Cockpit Controls and Displays	0 028	Human		Weighted Sum

Goal ID	Goal Label	Weighted Sum	Allocation	Qualitative Allocation	Rationale
7 9 11 1(j)	Monitor and Manage Weapons	0 029	Human		Weighted Sum
7 2 6 2(c)	Perform Navigation Systems Designations/Updates	0 033	Human		Weighted Sum
7 9 6 1(c)	Monitor Voice Alert System	0 034	Human		Weighted Sum
7 1 5 1(g)	Establish NVG Contact with AAR	0 037	Human		Weighted Sum
7 9 11 1(l)	Monitor and Manage NVIS	0 039	Human		Weighted Sum
7 9 1 1(e)	Monitor and Manage Feed Tank Level	0 043	Human		Weighted Sum
7 5 2 4(b)	Illuminate Enemy Air RWR	0 043	Human		Weighted Sum
7 2 3 2(b)	Egress at Low Altitude	0 051	Human		Weighted Sum
7 2 3 2(c)	Egress at Medium/High Altitude	0 051	Human		Weighted Sum
7 9 11 1(a)	Monitor and Manage Radar	0 052	Human		Weighted Sum
7 9 8 1(e)	Monitor and Manage Clock	0 059	Human		Weighted Sum
7 9 11 1(e)	Monitor and Manage AN/ALE-47	0 069	Human		Weighted Sum
7 6 4 1(b)	Request Clearance to Depart	0 073	Human		Weighted Sum
7 9 1 1(d)	Monitor and Compare Fuel Flow Indications	0 074	Human		Weighted Sum
7 6 2 1(b)	Maintain Positive Closure	0 075	Human		Weighted Sum

Goal ID	Goal Label	Weighted Sum	Allocation	Qualitative Allocation	Rationale
7 6 2 1(a)	Generate Positive Closure	0 075	Human		Weighted Sum
7 4 2 2(a)	Report Target via LINK 16/MIDS Secure Communications	0 076	Human		Weighted Sum
7 9 12 1(d)	Monitor and Manage NVG Modified Interior Lighting	0 081	Human		Weighted Sum
7 9 12 1(c)	Monitor and Manage NVG Modified Exterior Lighting	0 081	Human		Weighted Sum
7 9 10 1(b)	Monitor and Manage Navigation Aid Equipment	0 082	Human		Weighted Sum
7 4 2 1(c)	Acquire Enemy Targets on LINK 16/MIDS Displays	0 082	Human		Weighted Sum
7 1 1 3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays	0 083	Human		Weighted Sum
7 1 4 2(l)	Establish NVG Contact with Naval Ships	0 084	Human		Weighted Sum
7 1 1 2(h)	Establish NVG Contact with Other Mission Elements	0 084	Human		Weighted Sum
7 9 8 1(b)	Monitor and Manage Standby Instruments	0 085	Human		Weighted Sum
7 9 12 1(a)	Monitor and Manage Standard Exterior Lighting	0 085	Human		Weighted Sum
7 9 12 1(b)	Monitor and Manage Standard Interior Lighting	0 085	Human		Weighted Sum
7 6 3 1(a)	Generate Maximum Fuel Transfer	0 090	Human		Weighted Sum
7 9 8 1(c)	Monitor and Manage Radar Altimeter	0 092	Human		Weighted Sum
7 2 7 1(f)	Radar Sort Multiple Unknown Contacts	0 095	Human		Weighted Sum

Goal ID	Goal Label	Weighted Sum	Allocation	Qualitative Allocation	Rationale
7 2 7 2(f)	Sort Multiple Unknown Contacts with AMIRS	0 095	Human		Weighted Sum
7 3 2 1(c)	Enter Target Location in Aircraft database	0 099	Human		Weighted Sum
7 1 1 1(b)	Conduct TRP Hold	0 102	Human		Weighted Sum
7 2 1 1(b)	Ingress at Low Altitude (Sophisticated Environment)	0 102	Human		Weighted Sum
7 2 1 1(c)	Ingress at Medium/High Altitude (Permissive Environment)	0 102	Human		Weighted Sum
7 2 1 1(d)	Descend to Low Altitude (Sophisticated Environment)	0 102	Human		Weighted Sum
7 2 1 1(e)	Adjust to Medium/High Altitude (Permissive Environment)	0 102	Human		Weighted Sum
7 8 1 1(a)	Monitor Common Secure Voice Frequencies	0 108	Human		Weighted Sum
7 1 5 1(c)	Establish Communications with AAR	0 116	Human		Weighted Sum
7 1 1 2(b)	Establish Communications with Other Mission Elements	0 116	Human		Weighted Sum
7 1 1 2(c)	Establish Communications with Controlling Agency	0 116	Human		Weighted Sum
7 5 2 4(c)	Enhance Enemy Air Radar Acquisition	0 117	Human		Weighted Sum
7 2 7 2(a)	Monitor and Maintain Assigned AMIRS Search Parameters	0 121	Human		Weighted Sum
7 1 1 2(e)	Confirm Friendly Force and Adversary Disposition on LINK 16/MIDS	0 121	Human		Weighted Sum
7 3 2 2(f)	Conduct Target Run In	0 124	Human		Weighted Sum



Goal ID	Goal Label	Weighted Sum	Allocation	Qualitative Allocation	Rationale
7 2 2 1(k)	Conduct BDA	0 125	Human		Weighted Sum
7 1 5 2(a)	Conduct AAR Sensors to Visual Intercept	0 130	Human		Weighted Sum
7 7 5 1(a)	Employ High Speed Flight	0 136	Human		Weighted Sum
7 6 3 3(a)	Generate Negative Closure	0 139	Human		Weighted Sum
7 2 2 1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays	0 139	Human		Weighted Sum
7 1 1 2(f)	Establish Visual Contact with Other Mission Elements	0 141	Human		Weighted Sum
7 1 5 1(e)	Establish Visual Contact with AAR	0 141	Human		Weighted Sum
7 1 4 2(g)	Establish Visual Contact with Naval Ships	0 141	Human		Weighted Sum
7 2 2 1(g)	Validate Weapons Solution Display	0 143	Human		Weighted Sum
7 2 7 1(b)	Monitor and Maintain Radar Contact with Formation Members	0 146	Human		Weighted Sum
7 2 7 2(b)	Monitor and Maintain AMIRS Contact with Formation Members	0 146	Human		Weighted Sum
7 2 7 1(d)	Monitor and Maintain Radar Contact with Unknowns	0 146	Human		Weighted Sum
7 2 7 1(c)	Monitor and Maintain Radar Contact with Lateral Mission Elements	0 146	Human		Weighted Sum
7 2 7 2(c)	Monitor and Maintain AMIRS Contact with Lateral Mission Elements	0 146	Human		Weighted Sum
7 2 7 2(d)	Monitor and Maintain AMIRS Contact with Unknowns	0 146	Human		Weighted Sum

Goal ID	Goal Label	Weighted Sum	Allocation	Qualitative Allocation	Rationale
7 7 2 1(b)	Avoid Illuminating of the Enemy Air RWR	0 148	Human		Weighted Sum
7 4 2 2(b)	Report Target via Have Quick II Secure Communications	0 149	Human		Weighted Sum
7 3 2 2(d)	Communicate Target Acquired	0 157	Human		Weighted Sum
7 1 1 3(c)	Conduct Formation Join-up	0 159	Human		Weighted Sum
7 3.2 2(a)	Receive Target Description Brief from FAC	0 159	Human		Weighted Sum
7 2 7 2(e)	Advise on AMIRS Acquired Unknowns	0 159	Human		Weighted Sum
7 2 7 3(e)	Advise on Visually Acquired Unknowns	0 159	Human		Weighted Sum
7 2 7 1(e)	Advise on Radar Acquired Unknowns	0 159	Human		Weighted Sum
7 2 2 1(d)	Manoeuvre to Weapons Delivery Parameters	0 163	Human		Weighted Sum
7 1 1 1(a)	Identify TRP	0 167	Human		Weighted Sum
7 2 7 1(a)	Monitor and Maintain Assigned Radar Sensor Search Parameters	0 168	Human		Weighted Sum
7 2 3 2(d)	Conduct Lame Duck Procedures	0 168	Human		Weighted Sum
7 6 2 2(a)	Position Pitch Ladders	0 172	Human		Weighted Sum
7 1 5 2(f)	Conduct AAR Sensors to NVG Intercept	0 181	Human		Weighted Sum
7 5 2 5(c)	Employ Air-to-Air RMD	0 182	Human		Weighted Sum

Goal ID	Goal Label	Weighted Sum	Allocation	Qualitative Allocation	Rationale
7 6 3 3(c)	Move to Astern Position	0 183	Human		Weighted Sum
7 6 3 3(e)	Move to Outboard / Echelon Position	0 183	Human		Weighted Sum
7 6 4 1(a)	Establish Departure Echelon Position	0 183	Human		Weighted Sum
7 6 2 3(c)	Make Contact	0 183	Human		Weighted Sum
7 6 2 2(b)	Align Probe	0 183	Human		Weighted Sum
7 3 2 1(a)	Copy Target Brief from FAC	0 183	Human		Weighted Sum
7 3 2 1(b)	Read Back Mandatory Items to FAC	0 184	Human		Weighted Sum
7 6 4 1(c)	Depart	0 185	Human		Weighted Sum
7 6 2 1(c)	Monitor and Obey AAR Lights	0 185	Human		Weighted Sum
7 1 1 1(c)	Search for TRP	0 185	Human		Weighted Sum
7 2 2 1(f)	Conduct Element Split Attacks	0 186	Human		Weighted Sum
7 1 4 1(f)	Confirm Positive Radar Identification by Naval Controlling Agency	0 189	Human		Weighted Sum
7 6 2 3(a)	Pick Approach Reference	0 196	Human		Weighted Sum
7 2 6 1(d)	Monitor and Avoid ACO Restricted Areas	0 203	Human		Weighted Sum
7 2 6 1(b)	Adhere to ACO	0 203	Human		Weighted Sum

Goal ID	Goal Label	Weighted Sum	Allocation	Qualitative Allocation	Rationale
7 2 4 2(b)	Conduct Fence Out Check	0 207	Human		Weighted Sum
7 2 6 2(f)	Navigate Using NVG Visual References	0 212	Human		Weighted Sum
7 2 7 1(h)	Monitor Tactical Picture on LINK 16/MIDS Displays	0 213	Human		Weighted Sum
7 8 1 1(c)	Monitor Broadcast Frequencies	0 218	Human		Weighted Sum
7 7 2 1(d)	Establish Diverging Paths	0 220	Human		Weighted Sum
7 6 2 3(b)	Maintain Attitude References	0 227	Human		Weighted Sum
7 4 2 1(e)	Utilize Lateral Mission Element Tactical Information	0 233	Human		Weighted Sum
7 2 7 3(f)	Maintain NVG Visual Search Patterns	0.234	Human		Weighted Sum
7 4 2 1(f)	Find Target with AMIRS Search Sort and Target Contract	0 234	Human		Weighted Sum
7 5 2 7(g)	Monitor Weapon Fly Out	0 236	Human		Weighted Sum
7 7 6 3(a)	Employ Surface-to-Air RMD	0 237	Human		Weighted Sum
7 1 5 1(d)	Conduct Pre AAR RV Checks	0 238	Human		Weighted Sum
7 1 5 2(e)	Conduct Pre-Contact AAR Checks	0 238	Human		Weighted Sum
7 2 2 2(b)	Designate Target Position	0 239	Human		Weighted Sum
7 2 2 1(l)	Conduct Coordinated Attacks with Other Aircraft/Elements/Sections	0 239	Human		Weighted Sum

Goal ID	Goal Label	Weighted Sum	Allocation	Qualitative Allocation	Rationale
7 2 4 2(a)	Conduct BD Check	0 241	Human		Weighted Sum
7 2 2 1(a)	Conduct A/G Check	0 242	Human		Weighted Sum
7 1 2 1(e)	Get Initial Target Brief	0 246	Human		Weighted Sum
7 2 6 2(b)	Navigate Using Sensors Information Displayed on HSD and DDIs	0 251	Human		Weighted Sum
7 1 5 2(b)	Adopt AAR Towline Waiting Position	0 258	Human		Weighted Sum
7 1 5 2(c)	Join In Echelon Position	0 258	Human		Weighted Sum
7 1 5 2(d)	Position Astern AAR Hoses	0 258	Human		Weighted Sum
7 2 6 1(c)	Adjust G/S to Make Tasking Timings	0.259	Human		Weighted Sum
7 2 6 1(a)	Maintain Ground Track	0 262	Human		Weighted Sum
7 2 2 1(n)	Search for Initial Point	0 262	Human		Weighted Sum
7 2 2 1(o)	Search for Target	0 262	Human		Weighted Sum
7 2 5 1(a)	Establish Tactical Roles - Tactical Leads and Wingmen	0.267	Human		Weighted Sum
7 3 2 2(b)	Find Target Using Sensors	0 267	Human		Weighted Sum
7 1 4 1(c)	Conduct Weapons Check-In with Controlling Agency	0 273	Human		Weighted Sum
7 2 6 2(c)	Arrive at Target at Predetermined TOT	0 276	Human		Weighted Sum

Goal ID	Goal Label	Weighted Sum	Allocation	Qualitative Allocation	Rationale
7 2 5 2(a)	Optimize Formation for Tactical Situation	0 277	Human		Weighted Sum
7 5 2 3(c)	Employ Jammers	0 278	Human		Weighted Sum
7 2 2 1(p)	Identify Initial Point with NVG	0 280	Human		Weighted Sum
7 2 2 1(b)	Identify Initial Point Visually	0 280	Human		Weighted Sum
7 2 7 3(a)	Maintain Visual Search Patterns	0 291	Human		Weighted Sum
7 2 5 2(b)	Maintain Visual Mutual Support	0 291	Human		Weighted Sum
7 4 2 1(d)	Find Target with Radar Search Sort and Target Contract	0 291	Human		Weighted Sum
7 3 2 2(e)	Describe Target Area and Target to FAC	0 292	Human		Weighted Sum
7 2 2 1(j)	Conduct Frag Avoidance Manoeuvre	0 296	Human		Weighted Sum
7 2 2 1(i)	Conduct Safe Escape Manoeuvre	0 296	Human		Weighted Sum
7 7 2 1(e)	React Aggressively to Enemy Air Manoeuvre	0 298	Human		Weighted Sum
7 2 6 2(d)	Employ Watch Map Ground Technique	0 299	Human		Weighted Sum
7 2 5 2(c)	Maintain Positional Mutual Support	0 309	Human		Weighted Sum
7 2 5 2(g)	Communicate with Formation Members via Data Link	0 315	Human		Weighted Sum
7 2 5 2(e)	Maintain Visual Mutual Support with NVG	0 318	Human		Weighted Sum

Goal ID	Goal Label	Weighted Sum	Allocation	Qualitative Allocation	Rationale
7 1 1 2(d)	Get Tactical Update and Area Brief	0 320	Human		Weighted Sum
7 9 1 1(g)	Monitor and Manage Bingo Fuel	0 320	Human		Weighted Sum
7 5 2 5(e)	Employ AAGD	0 321	Human		Weighted Sum
7 7 5 1(c)	Avoid Threat Envelopes	0 330	Human		Weighted Sum
7 4 2 1(g)	Conduct Visual Lookout with NVG	0 343	Human		Weighted Sum
7 5 2 3(b)	Dispense Chaff	0 344	Human		Weighted Sum
7 2 7 3(g)	Monitor and Maintain NVG Contact with Formation Members	0.347	Human		Weighted Sum
7 2 7 3(h)	Monitor and Maintain NVG Contact with Lateral Mission Elements	0 347	Human		Weighted Sum
7 2 7 3(i)	Monitor and Maintain NVG Contact with Unknowns	0 347	Human		Weighted Sum
7 4 2 1(a)	Conduct Visual Lookout	0 347	Human		Weighted Sum
7 4 2 1(b)	Respond to displayed RWR Threat Emission Information	0 355	Human		Weighted Sum
7 5 2 6(a)	Manoeuvre Aircraft to Intercept Enemy	0 357	Human		Weighted Sum
7 2 5 1(b)	Maintain Aircraft Control and Flight Position	0 369	Human		Weighted Sum
7 5 2 7(a)	Manoeuvre to a Weapons Engagement Zone	0 377	Human		Weighted Sum
7 7 6 1(b)	Employ Defensive Counter Measures	0 377	Human		Weighted Sum

Goal ID	Goal Label	Weighted Sum	Allocation	Qualitative Allocation	Rationale
7 7 5 3(b)	Employ Atmospheric Phenomena	0 386	Human		Weighted Sum
7 2 6 2(a)	Navigate Using Visual References	0 394	Human		Weighted Sum
7 2 5 1(c)	Execute Manoeuvre Turns	0 400	Human		Weighted Sum
7 2 7 3(d)	Monitor and Maintain Visual Contact with Unknowns	0 404	Human		Weighted Sum
7 2 7 3(b)	Monitor and Maintain Visual Contact with Formation Members	0 404	Human		Weighted Sum
7 2 7 3(c)	Monitor and Maintain Visual Contact with Lateral Mission Elements	0 404	Human		Weighted Sum
7 2 5 2(f)	Communicate with Formation Members via Discreet Frequency	0 406	Human		Weighted Sum
7 5 2 5(d)	Employ Air-to-Air IRMD	0 423	Human		Weighted Sum
7 7 6 3(b)	Employ Surface-to-Air IRMD	0 423	Human		Weighted Sum
7 2 6 3(c)	Monitor and Avoid Terrain	0 426	Human		Weighted Sum
7 5 2 4(a)	Manoeuvre/Expose the Tactical Formation	0 436	Human		Weighted Sum
7 7 3 6(i)	Jettison External Stores	0 452	Human		Weighted Sum
7 7 2 1(a)	Manoeuvre the Tactical Formation	0 463	Human		Weighted Sum
7 7 2 1(c)	Configure the Tactical Formation	0 463	Human		Weighted Sum
7 5 2 2(a)	Employ Radar Search Sort and Target Contract	0 466	Human		Weighted Sum



Goal ID	Goal Label	Weighted Sum	Allocation	Qualitative Allocation	Rationale
7 5 2 2(l)	Employ AMIRS Search Sort and Target Contract	0 466	Human		Weighted Sum
7 5 2 3(a)	Employ Tactical Deception	0 509	Human		Weighted Sum
7 5 2 5(f)	Egress Engagement Safely	0 511	Human		Weighted Sum
7 5 2 7(d)	Maintain Post Attack Offensive	0 511	Human		Weighted Sum
7 5 2 3(d)	Employ BVR Deception Tactics	0 511	Human		Weighted Sum
7 5 2 4(d)	Draw Enemy Air Away	0 511	Human		Weighted Sum
7 5 2 1(b)	Conduct CAP	0 522	Human		Weighted Sum
7 5 2 7(f)	Assess Post Merge ACM Options	0 548	Human		Weighted Sum
7 5 2 2(e)	Advise on Approaching Threats	0 550	Human		Weighted Sum
7 4 2 2(c)	Utilize C2 Directive and Descriptive Commentary	0 558	Human		Weighted Sum
7 2 6 3(a)	Monitor and Avoid Weather	0 563	Human		Weighted Sum
7 2 6 3(b)	Monitor and Avoid Obstacles	0 563	Human		Weighted Sum
7 2 6 3(e)	Monitor and Avoid Other Aircraft	0 563	Human		Weighted Sum
7 9 1 1(h)	Monitor and Manage Tactical Fuel	0 622	Human		Weighted Sum

## **Annex F**

### **Goal Inventory with Completion Times**

## Annex F - CF18 Air to Ground Goal Inventory With Completion Times

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.1.1.1(a)	7.1.1.1(a)	Identify TRP	10
7.1.1.1(b)	7.1.1.1(b)	Conduct TRP Hold	300
7.1.1.1(c)	7.1.1.1(c)	Search for TRP	20
7.1.1.2(a)	7.1.1.2(a)	Establish Radar Contact with Other Mission Elements	20
7.1.1.2(b)	7.1.1.2(b)	Establish Communications with Other Mission Elements	12
7.1.1.2(c)	7.1.1.2(c)	Establish Communications with Controlling Agency	15
7.1.1.2(d)	7.1.1.2(d)	Get Tactical Update and Area Brief	15
7.1.1.2(e)	7.1.1.2(e)	Confirm Friendly Force and Adversary Disposition on LINK 16/MI	10
7.1.1.2(f)	7.1.1.2(f)	Establish Visual Contact with Other Mission Elements	10
7.1.1.2(g)	7.1.1.2(g)	Establish AMIRS Contact with Other Mission Elements	10
7.1.1.2(h)	7.1.1.2(h)	Establish NVG Contact with Other Mission Elements	10
7.1.1.3(a)	7.1.1.2(a)	Establish Radar Contact with Other Formation Members	20
7.1.1.3(b)	7.1.1.2(b)	Establish Communications with Other Formation Members	12
7.1.1.3(c)	7.1.1.3(c)	Conduct Formation Join-up	60
7.1.1.3(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays	5
7.1.1.3(e)	7.1.1.2(f)	Establish Visual Contact with Other Formation Members	10
7.1.1.3(f)	7.1.1.2(g)	Establish AMIRS Contact with Other Formation Members	10
7.1.1.3(g)	7.1.1.2(h)	Establish NVG Contact with Other Formation Members	10
7.1.1.3(h)	7.2.5.1(b)	Maintain Aircraft Control and Flight Position	999
7.1.2.1(a)	7.1.1.2(a)	Establish Radar Contact with Other Mission Elements	20
7.1.2.1(b)	7.1.1.2(c)	Establish Communications with Controlling Agency (ABCCC/AWA	15
7.1.2.1(c)	7.1.1.2(b)	Establish Communications with Forward Air Controller (FAC)	12
7.1.2.1(d)	7.1.1.2(d)	Get Tactical Update and Area Brief	15
7.1.2.1(e)	7.1.2.1(e)	Get Initial Target Brief	30
7.1.2.1(f)	7.1.1.2(f)	Establish Visual Contact with Other Mission Elements	10
7.1.2.1(g)	7.1.1.2(g)	Establish AMIRS Contact with Other Mission Elements	10
7.1.2.1(h)	7.1.1.2(h)	Establish NVG Contact with Other Mission Elements	10

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.1.2.2(a)	7.1.1.2(a)	Establish Radar Contact with Other Formation Members	20
7.1.2.2(b)	7.1.1.2(b)	Establish Communications with Other Formation Members	12
7.1.2.2(c)	7.1.1.3(c)	Conduct Formation Join-up	60
7.1.2.2(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays	5
7.1.2.2(e)	7.1.1.2(f)	Establish Visual Contact with Other Formation Members	10
7.1.2.2(f)	7.1.1.2(g)	Establish AMIRS Contact with Other Formation Members	10
7.1.2.2(g)	7.1.1.2(h)	Establish NVG Contact with Other Formation Members	10
7.1.2.2(h)	7.2.5.1(b)	Maintain Aircraft Control and Flight Position	999
7.1.3.1(a)	7.1.1.1(a)	Identify TRP	10
7.1.3.1(b)	7.1.1.1(b)	Establish TRP Hold	300
7.1.3.1(c)	7.1.1.1(c)	Search for TRP	20
7.1.3.2(a)	7.1.1.2(a)	Establish Radar Contact with Other Mission Elements	20
7.1.3.2(b)	7.1.1.2(b)	Establish Communications with Other Mission Elements	12
7.1.3.2(c)	7.1.1.2(c)	Establish Communications with Controlling Agency	15
7.1.3.2(d)	7.1.1.2(d)	Get Tactical Update and Area Brief	15
7.1.3.2(e)	7.1.1.2(e)	Confirm Friendly Force and Adversary Disposition on LINK 16/MI	10
7.1.3.2(f)	7.1.1.2(f)	Establish Visual Contact with Other Mission Elements	10
7.1.3.2(g)	7.1.1.2(g)	Establish AMIRS Contact with Other Mission Elements	10
7.1.3.2(h)	7.1.1.2(h)	Establish NVG Contact with Other Mission Elements	10
7.1.3.3(a)	7.1.1.2(a)	Establish Radar Contact with Other Formation Members	20
7.1.3.3(b)	7.1.1.2(b)	Establish Communications with Other Formation Members	12
7.1.3.3(c)	7.1.1.3(c)	Conduct Formation Join-up	60
7.1.3.3(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays	5
7.1.3.3(e)	7.1.1.2(f)	Establish Visual Contact with Other Formation Members	10
7.1.3.3(f)	7.1.1.2(g)	Establish AMIRS Contact with Other Formation Members	10
7.1.3.3(g)	7.1.1.2(h)	Establish NVG Contact with Other Formation Members	10
7.1.3.3(h)	7.2.5.1(b)	Maintain Aircraft Control and Flight Position	999
7.1.4.1(a)	7.1.1.2(a)	Establish Radar Contact with Other Mission Elements	20
7.1.4.1(b)	7.1.1.2(b)	Establish Communications with Other Mission Elements	12
7.1.4.1(c)	7.1.4.1(c)	Conduct Weapons Check-In with Controlling Agency	10

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.1.4.1(d)	7.1.1.2(d)	Get Tactical Update and Area Brief	15
7.1.4.1(e)	7.1.1.2(e)	Confirm Friendly Force and Adversary Disposition on Link 16/MID	10
7.1.4.1(f)	7.1.4.1(f)	Confirm Positive Radar Identification by Naval Controlling Agency	10
7.1.4.1(g)	7.1.1.2(f)	Establish Visual Contact with Other Mission Elements	10
7.1.4.1(h)	7.1.1.2(g)	Establish AMIRS Contact with Other Mission Elements	10
7.1.4.1(i)	7.1.1.2(h)	Establish NVG Contact with Other Mission Elements	10
7.1.4.2(a)	7.1.1.2(a)	Establish Radar Contact with Other Formation Members	20
7.1.4.2(b)	7.1.1.2(b)	Establish Communications with Other Formation Members	12
7.1.4.2(c)	7.1.1.3(c)	Conduct Formation Join-up	60
7.1.4.2(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays	5
7.1.4.2(e)	7.1.4.2(e)	Establish Radar Contact with Naval Ships	20
7.1.4.2(f)	7.1.4.2(f)	Deploy to CAP	20
7.1.4.2(g)	7.1.4.2(g)	Establish Visual Contact with Naval Ships	10
7.1.4.2(h)	7.1.1.2(g)	Establish AMIRS Contact with Other Formation Members	10
7.1.4.2(i)	7.1.4.2(i)	Establish AMIRS Contact with Naval Ships	15
7.1.4.2(j)	7.1.1.2(f)	Establish Visual Contact with Other Formation Members	10
7.1.4.2(k)	7.1.1.2(h)	Establish NVG Contact with Other Formation Members	10
7.1.4.2(l)	7.1.4.2(l)	Establish NVG Contact with Naval Ships	10
7.1.4.2(m)	7.2.5.1(b)	Maintain Aircraft Control and Flight Position	999
7.1.5.1(a)	7.1.1.2(e)	Confirm Friendly Force and Adversary Disposition on LINK 16/MI	10
7.1.5.1(b)	7.1.5.1(b)	Establish Radar Contact with AAR	15
7.1.5.1(c)	7.1.5.1(c)	Establish Communications with AAR	10
7.1.5.1(d)	7.1.5.1(d)	Conduct Pre AAR RV Checks	15
7.1.5.1(e)	7.1.5.1(e)	Establish Visual Contact with AAR	10
7.1.5.1(f)	7.1.5.1(f)	Establish AMIRS Contact With AAR	10
7.1.5.1(g)	7.1.5.1(g)	Establish NVG Contact with AAR	10
7.1.5.2(a)	7.1.5.2(a)	Conduct AAR Sensors to Visual Intercept	300
7.1.5.2(b)	7.1.5.2(b)	Adopt AAR Towline Waiting Position	30
7.1.5.2(c)	7.1.5.2(c)	Join In Echelon Position	60
7.1.5.2(d)	7.1.5.2(d)	Position Astern AAR Hoses	20

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.1.5.2(e)	7.1 5.2(e)	Conduct Pre-Contact AAR Checks	15
7 1.5 2(f)	7.1.5.2(f)	Conduct AAR Sensors to NVG Intercept	300
7 1.5 2(g)	7.2.5.1(b)	Maintain Aircraft Control and Flight Position	999
7 1.6.1(a)	7.2.7.1(a)	Monitor and Maintain Assigned Radar Sensor Search Parameters	3
7.1.6.1(b)	7.2.7.1(b)	Monitor and Maintain Radar Contact with Formation Members	4
7.1.6.1(c)	7.2.7.1(c)	Monitor and Maintain Radar Contact with Lateral Mission Elements	4
7.1.6.1(d)	7.2.7.1(d)	Monitor and Maintain Radar Contact with Unknowns	5
7.1.6.1(e)	7.2.7.1(e)	Advise on Radar Acquired Unknowns	10
7.1.6 1(f)	7.2.7.1(f)	Radar Sort Multiple Unknown Contacts	30
7 1 6 1(g)	7.2.7.1(g)	Interrogate Unknown Radar Contacts with IFF	15
7 1 6 1(h)	7.2.7.1(h)	Monitor Tactical Picture on LINK 16/MIDS Displays	5
7.1.6.2(a)	7.2.7.2(a)	Monitor and Maintain Assigned AMIRS Search Parameters	2
7.1.6.2(b)	7.2.7.2(b)	Monitor and Maintain AMIRS Contact with Formation Members	4
7.1.6.2(c)	7.2.7 2(c)	Monitor and Maintain AMIRS Contact with Lateral Mission Elemer	4
7.1 6 2(d)	7.2.7.2(d)	Monitor and Maintain AMIRS Contact with Unknowns	5
7.1.6.2(e)	7.2.7.2(e)	Advise on AMIRS Acquired Unknowns	10
7.1.6.2(f)	7.2.7.2(f)	Sort Multiple Unknown Contacts with AMIRS	30
7.1.6.2(g)	7.2.7.2(g)	Interrogate Unknown AMIRS Contacts with IFF	15
7.1.6.3(a)	7.2.7.3(a)	Maintain Visual Search Patterns	5
7.1.6.3(b)	7.2.7.3(b)	Monitor and Maintain Visual Contact with Formation Members	2
7.1.6.3(c)	7.2.7.3(c)	Monitor and Maintain Visual Contact with Lateral Mission Element	2
7.1.6.3(d)	7.2.7.3(d)	Monitor and Maintain Visual Contact with Unknowns	5
7.1.6.3(e)	7.2.7 3(e)	Advise on Visually Acquired Unknowns	15
7.1.6.3(f)	7.2.7.3(f)	Maintain NVG Visual Search Patterns	7
7.1.6.3(g)	7.2 7.3(g)	Monitor and Maintain NVG Contact with Formation Members	7
7.1.6.3(i)	7.2.7.3(h)	Monitor and Maintain NVG Contact with Lateral Mission Elements	7
7 1.6.3(j)	7 2.7.3(i)	Monitor and Maintain NVG Contact with Unknowns	7
7 2.1 1(a)	7.2.1.1(a)	Reduce Aircraft Emissions (EMCON Procedures)	7
7.2.1.1(b)	7 2 1.1(b)	Ingress at Low Altitude (Sophisticated Environment)	999
7 2.1.1(c)	7.2.1.1(c)	Ingress at Medium/High Altitude (Permissive Environment)	999

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.2.1.1(d)	7.2.1.1(d)	Descend to Low Altitude (Sophisticated Environment)	30
7.2.1.1(e)	7.2.1.1(e)	Adjust to Medium/High Altitude (Permissive Environment)	30
7.2.2.1(a)	7.2.2.1(a)	Conduct A/G Check	15
7.2.2.1(b)	7.2.2.1(b)	Identify Initial Point Visually	5
7.2.2.1(c)	7.2.2.1(c)	Designate/Add Offset at Initial Point	25
7.2.2.1(d)	7.2.2.1(d)	Manoeuvre to Weapons Delivery Parameters	30
7.2.2.1(e)	7.2.2.1(b)	Identify Target/DMPI Visually	5
7.2.2.1(f)	7.2.2.1(f)	Conduct Element Split Attacks	70
7.2.2.1(g)	7.2.2.1(g)	Validate Weapons Solution Display	2
7.2.2.1(h)	7.2.2.1(h)	Deliver GP Weapons(Bombs/Rx/Cluster/Gx)	3
7.2.2.1(i)	7.2.2.1(i)	Conduct Safe Escape Manoeuvre	15
7.2.2.1(j)	7.2.2.1(j)	Conduct Frag Avoidance Manoeuvre	15
7.2.2.1(k)	7.2.2.1(k)	Conduct BDA	5
7.2.2.1(l)	7.2.2.1(l)	Conduct Coordinated Attacks with Other Aircraft/Elements/Sections	120
7.2.2.1(m)	7.2.2.1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays	5
7.2.2.1(n)	7.2.2.1(n)	Search for Initial Point	10
7.2.2.1(o)	7.2.2.1(o)	Search for Target	4
7.2.2.1(p)	7.2.2.1(p)	Identify Initial Point with NVG	5
7.2.2.1(q)	7.2.2.1(p)	Identify Target/DMPI with NVG	5
7.2.2.2(a)	7.2.2.1(a)	Conduct A/G Check	15
7.2.2.2(b)	7.2.2.2(b)	Designate Target Position	25
7.2.2.2(c)	7.2.2.2(c)	Identify Target Area with Aircraft Sensors	10
7.2.2.2(d)	7.2.2.1(d)	Manoeuvre to Weapons Delivery Parameters	30
7.2.2.2(e)	7.2.2.2(e)	Identify Target Using Map/Imagery/Onboard Sensors/LINK 16	10
7.2.2.2(f)	7.2.2.1(g)	Validate Weapons Solution Display	2
7.2.2.2(g)	7.2.2.2(g)	Deliver PGM (LGB/MAV/Adv PGM)	5
7.2.2.2(h)	7.2.2.2(h)	Conduct Self-Lasing LGB Delivery	50
7.2.2.2(i)	7.2.2.2(i)	Conduct Buddy-Lasing LGB Delivery	50
7.2.2.2(j)	7.2.2.2(j)	Update Target Designation	40
7.2.2.2(k)	7.2.2.1(i)	Conduct Safe Escape Manoeuvre	15

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.2.2.2(l)	7.2.2.1(k)	Conduct BDA	5
7.2.2.2(m)	7.2.2.1(l)	Conduct Coordinated Attacks with Other Aircraft/Elements/Sections	120
7.2.2.2(n)	7.2.2.1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays	5
7.2.2.2(o)	7.2.2.1(j)	Conduct Frag Avoidance Manoeuvre	15
7.2.3.1(a)	7.1.1.2(a)	Establish Radar Contact with Other Formation Members	20
7.2.3.1(b)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays	5
7.2.3.1(c)	7.1.1.3(c)	Conduct Formation Join-up	60
7.2.3.1(d)	7.1.1.2(f)	Establish Visual Contact with Other Formation Members	10
7.2.3.1(e)	7.1.1.2(g)	Establish AMIRS Contact with Other Formation Members	10
7.2.3.1(f)	7.1.1.2(h)	Establish NVG Contact with Other Formation Members	10
7.2.3.2(a)	7.2.1.1(a)	Allow Aircraft Emissions for Identification	7
7.2.3.2(b)	7.2.3.2(b)	Egress at Low Altitude	999
7.2.3.2(c)	7.2.3.2(c)	Egress at Medium/High Altitude	999
7.2.3.2(d)	7.2.3.2(d)	Conduct Lane Duck Procedures	999
7.2.3.2(e)	7.2.1.1(d)	Descend to Low Altitude (Sophisticated Environment)	30
7.2.3.2(f)	7.2.1.1(e)	Adjust to Medium/High Altitude (Permissive Environment)	30
7.2.4.1(a)	7.2.4.1(a)	Pass IFREP	15
7.2.4.2(a)	7.2.4.2(a)	Conduct BD Check	90
7.2.4.2(b)	7.2.4.2(b)	Conduct Fence Out Check	15
7.2.5.1(a)	7.2.5.1(a)	Establish Tactical Roles - Tactical Leads and Wingmen	999
7.2.5.1(b)	7.2.5.1(b)	Maintain Aircraft Control and Flight Position	999
7.2.5.1(c)	7.2.5.1(c)	Execute Manoeuvre Turns	30
7.2.5.1(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays	5
7.2.5.2(a)	7.2.5.2(a)	Optimize Formation for Tactical Situation	999
7.2.5.2(b)	7.2.5.2(b)	Maintain Visual Mutual Support	999
7.2.5.2(c)	7.2.5.2(c)	Maintain Positional Mutual Support	999
7.2.5.2(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays	5
7.2.5.2(e)	7.2.5.2(e)	Maintain Visual Mutual Support with NVG	999
7.2.5.2(f)	7.2.5.2(f)	Communicate with Formation Members via Discreet Frequency	5
7.2.5.2(g)	7.2.5.2(g)	Communicate with Formation Members via Data Link	10



Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.2.6.1(a)	7.2.6.1(a)	Maintain Ground Track	999
7.2.6.1(b)	7.2.6.1(b)	Adhere to ACO	999
7.2.6.1(c)	7.2.6.1(c)	Adjust G/S to Make Tasking Timings	10
7.2.6.1(d)	7.2.6.1(d)	Monitor and Avoid ACO Restricted Areas	999
7.2.6.2(a)	7.2.6.2(a)	Navigate Using Visual References	10
7.2.6.2(b)	7.2.6.2(b)	Navigate Using Sensors Information Displayed on HSD and DDIs	10
7.2.6.2(c)	7.2.6.2(c)	Perform Navigation Systems Designations/Updates	15
7.2.6.2(d)	7.2.6.2(d)	Employ Watch Map Ground Technique	20
7.2.6.2(e)	7.2.6.2(e)	Arrive at Target at Predetermined TOT	999
7.2.6.2(f)	7.2.6.2(f)	Navigate Using NVG Visual References	20
7.2.6.3(a)	7.2.6.3(a)	Monitor and Avoid Weather	10
7.2.6.3(b)	7.2.6.3(b)	Monitor and Avoid Obstacles	999
7.2.6.3(c)	7.2.6.3(c)	Monitor and Avoid Terrain	999
7.2.6.3(e)	7.2.6.3(e)	Monitor and Avoid Other Aircraft	999
7.2.7.1(a)	7.2.7.1(a)	Monitor and Maintain Assigned Radar Sensor Search Parameters	3
7.2.7.1(b)	7.2.7.1(b)	Monitor and Maintain Radar Contact with Formation Members	4
7.2.7.1(c)	7.2.7.1(c)	Monitor and Maintain Radar Contact with Lateral Mission Elements	4
7.2.7.1(d)	7.2.7.1(d)	Monitor and Maintain Radar Contact with Unknowns	5
7.2.7.1(e)	7.2.7.1(e)	Advise on Radar Acquired Unknowns	10
7.2.7.1(f)	7.2.7.1(f)	Radar Sort Multiple Unknown Contacts	30
7.2.7.1(g)	7.2.7.1(g)	Interrogate Unknown Radar Contacts with IFF	15
7.2.7.1(h)	7.2.7.1(h)	Monitor Tactical Picture on LINK 16/MIDS Displays	5
7.2.7.2(a)	7.2.7.2(a)	Monitor and Maintain Assigned AMIRS Search Parameters	2
7.2.7.2(b)	7.2.7.2(b)	Monitor and Maintain AMIRS Contact with Formation Members	4
7.2.7.2(c)	7.2.7.2(c)	Monitor and Maintain AMIRS Contact with Lateral Mission Elements	4
7.2.7.2(d)	7.2.7.2(d)	Monitor and Maintain AMIRS Contact with Unknowns	5
7.2.7.2(e)	7.2.7.2(e)	Advise on AMIRS Acquired Unknowns	10
7.2.7.2(f)	7.2.7.2(f)	Sort Multiple Unknown Contacts with AMIRS	30
7.2.7.2(g)	7.2.7.2(g)	Interrogate Unknown AMIRS Contacts with IFF	15
7.2.7.3(a)	7.2.7.3(a)	Maintain Visual Search Patterns	5

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.2.7.3(b)	7.2.7.3(b)	Monitor and Maintain Visual Contact with Formation Members	2
7.2.7.3(c)	7.2.7.3(c)	Monitor and Maintain Visual Contact with Lateral Mission Element	2
7.2.7.3(d)	7.2.7.3(d)	Monitor and Maintain Visual Contact with Unknowns	5
7.2.7.3(e)	7.2.7.3(e)	Advise on Visually Acquired Unknowns	15
7.2.7.3(f)	7.2.7.3(f)	Maintain NVG Visual Search Patterns	7
7.2.7.3(g)	7.2.7.3(g)	Monitor and Maintain NVG Contact with Formation Members	7
7.2.7.3(h)	7.2.7.3(h)	Monitor and Maintain NVG Contact with Lateral Mission Elements	7
7.2.7.3(i)	7.2.7.3(i)	Monitor and Maintain NVG Contact with Unknowns	7
7.3.1.1(a)	7.2.1.1(a)	Reduce Aircraft Emissions (EMCON Procedures)	7
7.3.1.1(b)	7.2.1.1(b)	Ingress at Low Altitude (Sophisticated Environment)	999
7.3.1.1(c)	7.2.1.1(c)	Ingress at Medium/High Altitude (Permissive Environment)	999
7.3.1.1(d)	7.2.1.1(d)	Descend to Low Altitude (Sophisticated Environment)	30
7.3.1.1(e)	7.2.1.1(e)	Adjust to Medium/High Altitude (Permissive Environment)	30
7.3.2.1(a)	7.3.2.1(a)	Copy Target Brief from FAC	90
7.3.2.1(b)	7.3.2.1(b)	Read Back Mandatory Items to FAC	90
7.3.2.1(c)	7.3.2.1(c)	Enter Target Location in Aircraft database	30
7.3.2.1(d)	7.3.2.1(e)	Confirm Target Location and Restrictions on MAP/HSD	60
7.3.2.1(e)	7.3.2.1(e)	Communicate with FAC via DATA LINK 16	60
7.3.2.2(a)	7.3.2.2(a)	Receive Target Description Brief from FAC	120
7.3.2.2(b)	7.3.2.2(b)	Find Target Using Sensors	120
7.3.2.2(c)	7.3.2.2(c)	Find Target Visually	60
7.3.2.2(d)	7.3.2.2(d)	Communicate Target Acquired	10
7.3.2.2(e)	7.3.2.2(e)	Describe Target Area and Target to FAC	60
7.3.2.2(f)	7.3.2.2(f)	Conduct Target Run In	120
7.3.2.2(g)	7.3.2.1(e)	Communicate with FAC via DATA LINK 16	60
7.3.2.2(h)	7.3.2.2(h)	Find Target with NVG	60
7.3.3.1(a)	7.2.2.1(a)	Conduct A/G Check	15
7.3.3.1(b)	7.2.2.1(b)	Identify Initial Point Visually	5
7.3.3.1(c)	7.2.2.1(c)	Designate/Add Offset at Initial Point	25
7.3.3.1(d)	7.2.2.1(d)	Manoeuvre to Weapons Delivery Parameters	30

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.3.3 1(e)	7.2.2 1(b)	Identify Target/DMPI Visually	5
7 3 3 1(f)	7.2 2 1(f)	Conduct Element Split Attacks	70
7 3.3.1(g)	7 2 2.1(g)	Validate Weapons Solution Display	2
7.3.3.1(h)	7.2.2.1(h)	Deliver GP Weapons(Bombs/Rx/Cluster/Gx)	3
7 3 3 1(i)	7.2.2.1(i)	Conduct Safe Escape Manoeuvre	15
7.3.3.1(j)	7.2.2.1(j)	Conduct Frag Avoidance Manoeuvre	15
7.3 3 1(k)	7.2.2.1(k)	Conduct BDA	5
7 3 3 1(l)	7.2.2.1(l)	Conduct Coordinated Attacks with Other Aircraft/Elements/Sections	120
7.3.3.1(m)	7.2.2.1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays	5
7.3.3 1(n)	7.2.2.1(n)	Search for Initial Point	10
7.3.3.1(o)	7.2.2.1(o)	Search for Target	4
7 3 3.1(p)	7.2 2.1(p)	Identify Initial Point with NVG	5
7.3.3.1(q)	7.2.2.1(p)	Identify Target/DMPI with NVG	5
7 3 3 2(a)	7.2.2.1(a)	Conduct A/G Check	15
7 3 3 2(b)	7.2.2.2(b)	Designate Target Position	25
7 3.3.2(c)	7.2.2.2(c)	Identify Target Area with Aircraft Sensors	10
7.3 3.2(d)	7.2.2.1(d)	Manoeuvre to Weapons Delivery Parameters	30
7.3 3.2(e)	7.2.2.2(e)	Identify Target Using Map/Imagery/Onboard Sensors/LINK 16	10
7 3 3.2(f)	7.2.2.1(g)	Validate Weapons Solution Display	2
7.3 3 2(g)	7.2.2.2(g)	Deliver PGM (LGB/MAV/Adv PGM)	5
7.3 3 2(h)	7.2.2.2(h)	Conduct Self-Lasing LGB Delivery	50
7.3 3.2(i)	7.2.2 2(i)	Conduct Buddy-Lasing LGB Delivery	50
7.3 3 2(j)	7.2 2.2(j)	Update Target Designation	40
7.3.3 2(k)	7.2.2.1(i)	Conduct Safe Escape Manoeuvre	15
7.3 3.2(l)	7.2.2.1(k)	Conduct BDA	5
7 3 3.2(m)	7.2 2.1(l)	Conduct Coordinated Attacks with Other Aircraft/Elements/Sections	120
7.3.3.2(n)	7.2.2.1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays	5
7 3 3 2(o)	7.2.2.1(j)	Conduct Frag Avoidance Manoeuvre	15
7 3.4.1(a)	7.1 1.2(a)	Establish Radar Contact with Other Formation Members	20
7.3.4.1(b)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays	5

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.3.4.1(c)	7.1.1.3(c)	Conduct Formation Join-up	60
7.3.4.1(d)	7.1.1.2(f)	Establish Visual Contact with Other Formation Members	10
7.3.4.1(e)	7.1.1.2(h)	Establish NVG Contact with Other Formation Members	10
7.3.4.2(a)	7.2.1.1(a)	Allow Aircraft Emissions for Identification	7
7.3.4.2(b)	7.2.3.2(b)	Egress at Low Altitude	999
7.3.4.2(c)	7.2.3.2(c)	Egress at Medium/High Altitude	999
7.3.4.2(d)	7.2.3.2(d)	Conduct Lame Duck Procedures	999
7.3.4.2(e)	7.2.1.1(d)	Descend to Low Altitude (Sophisticated Environment)	30
7.3.4.2(f)	7.2.1.1(e)	Adjust to Medium/High Altitude (Permissive Environment)	30
7.3.5.1(a)	7.2.4.1(a)	Pass IFREP	15
7.3.5.2(a)	7.2.4.2(a)	Conduct BD Check	90
7.3.5.2(b)	7.2.4.2(b)	Conduct Fence Out Check	15
7.3.6.1(a)	7.2.5.1(a)	Establish Tactical Roles - Tactical Leads and Wingmen	999
7.3.6.1(b)	7.2.5.1(b)	Maintain Aircraft Control and Flight Position	999
7.3.6.1(c)	7.2.5.1(c)	Execute Manoeuvre Turns	30
7.3.6.1(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays	5
7.3.6.2(a)	7.2.5.2(a)	Optimize Formation for Tactical Situation	999
7.3.6.2(b)	7.2.5.2(b)	Maintain Visual Mutual Support	999
7.3.6.2(c)	7.2.5.2(c)	Maintain Positional Mutual Support	999
7.3.6.2(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays	5
7.3.6.2(e)	7.2.5.2(e)	Maintain Visual Mutual Support with NVG	999
7.3.6.2(f)	7.2.5.2(f)	Communicate with Formation Members via Discreet frequency	5
7.3.6.2(g)	7.2.5.2(g)	Communicate with Formation Members via Data Link	10
7.3.7.1(a)	7.2.6.1(a)	Maintain Ground Track	999
7.3.7.1(b)	7.2.6.1(b)	Adhere to ACO	999
7.3.7.1(c)	7.2.6.1(c)	Adjust G/S to Make Tasking Timings	10
7.3.7.1(d)	7.2.6.1(d)	Monitor and Avoid ACO Restricted Areas	999
7.3.7.2(a)	7.2.6.2(a)	Navigate Using Visual References	10
7.3.7.2(b)	7.2.6.2(b)	Navigate Using Sensors Information Displayed on HSD and DDIs	10
7.3.7.2(c)	7.2.6.2(c)	Perform Navigation Systems Designations/Updates	15

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.3.7.2(d)	7.2.6.2(d)	Employ Watch Map Ground Technique	20
7.3.7.2(e)	7.2.6.2(e)	Arrive at Target at Predetermined TOT	999
7.3.7.2(f)	7.2.6.2(f)	Navigate Using NVG Visual References	20
7.3.7.3(a)	7.2.6.3(a)	Monitor and Avoid Weather	10
7.3.7.3(b)	7.2.6.3(b)	Monitor and Avoid Obstacles	999
7.3.7.3(c)	7.2.6.3(c)	Monitor and Avoid Terrain	999
7.3.7.3(d)	7.2.6.3(e)	Monitor and Avoid Other Aircraft	999
7.3.8.1(a)	7.2.7.1(a)	Monitor and Maintain Assigned Radar Sensor Search Parameters	3
7.3.8.1(b)	7.2.7.1(b)	Monitor and Maintain Radar Contact with Formation Members	4
7.3.8.1(c)	7.2.7.1(c)	Monitor and Maintain Radar Contact with Lateral Mission Elements	4
7.3.8.1(d)	7.2.7.1(d)	Monitor and Maintain Radar Contact with Unknowns	5
7.3.8.1(e)	7.2.7.1(e)	Advise on Radar Acquired Unknowns	10
7.3.8.1(f)	7.2.7.1(f)	Radar Sort Multiple Unknown Contacts	30
7.3.8.1(g)	7.2.7.1(h)	Monitor Tactical Picture on LINK 16/MIDS Displays	5
7.3.8.1(h)	7.2.7.1(g)	Interrogate Unknown Radar Contacts with IFF	15
7.3.8.2(a)	7.2.7.2(a)	Monitor and Maintain Assigned AMIRS Search Parameters	2
7.3.8.2(b)	7.2.7.2(b)	Monitor and Maintain AMIRS Contact with Formation Members	4
7.3.8.2(c)	7.2.7.2(c)	Monitor and Maintain AMIRS Contact with Lateral Mission Element	4
7.3.8.2(d)	7.2.7.2(g)	Interrogate Unknown AMIRS Contacts with IFF	15
7.3.8.2(e)	7.2.7.2(d)	Monitor and Maintain AMIRS Contact with Unknowns	5
7.3.8.2(f)	7.2.7.2(e)	Advise on AMIRS Acquired Unknowns	10
7.3.8.2(g)	7.2.7.2(f)	Sort Multiple Unknown Contacts with AMIRS	30
7.3.8.3(a)	7.2.7.3(a)	Maintain Visual Search Patterns	5
7.3.8.3(b)	7.2.7.3(b)	Monitor and Maintain Visual Contact with Formation Members	2
7.3.8.3(c)	7.2.7.3(c)	Monitor and Maintain Visual Contact with Lateral Mission Element	2
7.3.8.3(d)	7.2.7.3(d)	Monitor and Maintain Visual Contact with Unknowns	5
7.3.8.3(e)	7.2.7.3(e)	Advise on Visually Acquired Unknowns	15
7.3.8.3(f)	7.2.7.3(f)	Maintain NVG Visual Search Patterns	7
7.3.8.3(g)	7.2.7.3(g)	Monitor and Maintain NVG Contact with Formation Members	7
7.3.8.3(h)	7.2.7.3(h)	Monitor and Maintain NVG Contact with Lateral Mission Elements	7

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.3.8.3(i)	7.2.7.3(i)	Monitor and Maintain NVG Contact with Unknowns	7
7.4.1.1(a)	7.2.1.1(a)	Reduce Aircraft Emissions (EMCON Procedures)	7
7.4.1.1(b)	7.2.1.1(b)	Ingress at Low Altitude (Sophisticated Environment)	999
7.4.1.1(c)	7.2.1.1(c)	Ingress at Medium/High Altitude (Permissive Environment)	999
7.4.1.1(d)	7.2.1.1(d)	Descend to Low Altitude (Sophisticated Environment)	30
7.4.1.1(e)	7.2.1.1(e)	Adjust to Medium/High Altitude (Permissive Environment)	30
7.4.2.1(a)	7.4.2.1(a)	Conduct Visual Lookout	5
7.4.2.1(b)	7.4.2.1(b)	Respond to displayed RWR Threat Emission Information	10
7.4.2.1(c)	7.4.2.1(c)	Acquire Enemy Targets on LINK 16/MIDS Displays	15
7.4.2.1(d)	7.4.2.1(d)	Find Target with Radar Search Sort and Target Contract	30
7.4.2.1(e)	7.4.2.1(e)	Utilize Lateral Mission Element Tactical Information	30
7.4.2.1(f)	7.4.2.1(f)	Find Target with AMIRS Search Sort and Target Contract	30
7.4.2.1(g)	7.4.2.1(g)	Conduct Visual Lookout with NVG	7
7.4.2.2(a)	7.4.2.2(a)	Report Target via LINK 16/MIDS Secure Communications	20
7.4.2.2(b)	7.4.2.2(b)	Report Target via Have Quick II Secure Communications	20
7.4.2.2(c)	7.4.2.2(c)	Utilize C2 Directive and Descriptive Commentary	10
7.4.2.2(d)	7.2.2.1(b)	Identify Target/DMPI Visually	5
7.4.2.2(e)	7.2.2.2(c)	Identify Target Area with Aircraft Sensors	10
7.4.2.2(f)	7.2.2.2(e)	Identify Target Using Map/Imagery/Onboard Sensors/LINK 16	10
7.4.2.2(g)	7.2.2.1(p)	Identify Initial Point with NVG	5
7.4.3.1(a)	7.2.2.1(b)	Identify Initial Point Visually	5
7.4.3.1(b)	7.2.2.1(c)	Designate/Add Offset at Initial Point	25
7.4.3.1(c)	7.2.2.1(a)	Conduct A/G Check	15
7.4.3.1(d)	7.2.2.1(d)	Manoeuvre to Weapons Delivery Parameters	30
7.4.3.1(e)	7.2.2.1(b)	Identify Target/DMPI Visually	5
7.4.3.1(f)	7.2.2.1(f)	Conduct Element Split Attacks	70
7.4.3.1(g)	7.2.2.1(g)	Validate Weapons Solution Display	2
7.4.3.1(h)	7.2.2.1(h)	Deliver GP Weapons(Bombs/Rx/Cluster/Gx)	3
7.4.3.1(i)	7.2.2.1(i)	Conduct Safe Escape Manoeuvre	15
7.4.3.1(j)	7.2.2.1(j)	Conduct Frag Avoidance Manoeuvre	15

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.4.3.1(k)	7.2.2.1(k)	Conduct BDA	5
7.4.3.1(l)	7.2.2.1(l)	Conduct Coordinated Attacks with Other Aircraft/Elements/Sections	120
7.4.3.1(m)	7.2.2.1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays	5
7.4.3.1(n)	7.2.2.1(n)	Search for Initial Point	10
7.4.3.1(o)	7.2.2.1(o)	Search for Target	4
7.4.3.1(p)	7.2.2.1(p)	Identify Initial Point with NVG	5
7.4.3.1(q)	7.2.2.1(p)	Identify Target/DMPI with NVG	5
7.4.3.2(a)	7.2.2.1(a)	Conduct A/G Check	15
7.4.3.2(b)	7.2.2.2(b)	Designate Target Position	25
7.4.3.2(c)	7.2.2.2(c)	Identify Target Area with Aircraft Sensors	10
7.4.3.2(d)	7.2.2.1(d)	Manoeuvre to Weapons Delivery Parameters	30
7.4.3.2(e)	7.2.2.2(e)	Identify Target Using Map/Imagery/Onboard Sensors/LINK 16	10
7.4.3.2(f)	7.2.2.1(g)	Validate Weapons Solution Display	2
7.4.3.2(g)	7.2.2.2(g)	Deliver PGM (LGB/MAV/Adv PGM)	5
7.4.3.2(h)	7.2.2.2(h)	Conduct Self-Lasing LGB Delivery	50
7.4.3.2(i)	7.2.2.2(i)	Conduct Buddy-Lasing LGB Delivery	50
7.4.3.2(j)	7.2.2.2(j)	Update Target Designation	40
7.4.3.2(k)	7.2.2.2(i)	Conduct Buddy-Lasing LGB Delivery	50
7.4.3.2(l)	7.2.2.1(k)	Conduct BDA	5
7.4.3.2(m)	7.2.2.1(l)	Conduct Coordinated Attacks with Other Aircraft/Elements/Sections	120
7.4.3.2(n)	7.2.2.1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays	5
7.4.3.2(o)	7.2.2.1(i)	Conduct Safe Escape Manoeuvre	15
7.4.3.2(p)	7.2.2.1(j)	Conduct Frag Avoidance Manoeuvre	15
7.4.4.1(a)	7.1.1.2(a)	Establish Radar Contact with Other Formation Members	20
7.4.4.1(b)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays	5
7.4.4.1(c)	7.1.1.3(c)	Conduct Formation Join-up	60
7.4.4.1(d)	7.1.1.2(f)	Establish Visual Contact with Other Formation Members	10
7.4.4.1(e)	7.1.1.2(h)	Establish NVG Contact with Other Formation Members	10
7.4.4.2(a)	7.2.1.1(a)	Allow Aircraft Emissions for Identification	7
7.4.4.2(b)	7.2.3.2(b)	Egress at Low Altitude	999

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7 4 4.2(c)	7.2.3.2(c)	Egress at Medium/High Altitude	999
7.4 4.2(d)	7.2.3.2(d)	Conduct Lame Duck Procedures	999
7.4.4.2(e)	7.2.1.1(d)	Descend to Low Altitude (Sophisticated Environment)	30
7.4.4.2(f)	7 2.1.1(e)	Adjust to Medium/High Altitude (Permissive Environment)	30
7.4.5.1(a)	7.2.4.1(a)	Pass IFREP	15
7.4.5 2(a)	7.2.4.2(a)	Conduct BD Check	90
7.4.5.2(b)	7.2.4.2(b)	Conduct Fence Out Check	15
7.4 6 1(a)	7.2.5 1(a)	Establish Tactical Roles - Tactical Leads and Wingmen	999
7 4 6 1(b)	7.2.5.1(b)	Maintain Aircraft Control and Flight Position	999
7.4 6 1(c)	7.2.5.1(c)	Execute Manoeuvre Turns	30
7.4.6.1(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays	5
7.4.6.2(a)	7.2.5.2(a)	Optimize Formation for Tactical Situation	999
7.4.6.2(b)	7.2.5.2(b)	Maintain Visual Mutual Support	999
7.4.6.2(c)	7.2.5.2(c)	Maintain Positional Mutual Support	999
7 4 6 2(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays	5
7.4.6 2(e)	7.2.5.2(e)	Maintain Visual Mutual Support with NVG	999
7.4.6.2(f)	7.2.5.2(f)	Communicate with Formation Members via Discreet frequency	5
7.4 6.2(g)	7.2.5.2(g)	Communicate with Formation Members via Data Link	10
7.4 7 1(a)	7 2 6.1(a)	Maintain Ground Track	999
7.4 7 1(b)	7 2.6.1(b)	Adhere to ACO	999
7.4 7.1(c)	7.2.6.1(c)	Adjust G/S to Make Tasking Timings	10
7 4.7 1(d)	7.2 6 1(d)	Monitor and Avoid ACO Restricted Areas	999
7.4.7.2(a)	7.2.6.2(a)	Navigate Using Visual References	10
7.4.7.2(b)	7.2.6.2(b)	Navigate Using Sensors Information Displayed on HSD and DDIs	10
7.4.7.2(c)	7.2.6.2(c)	Perform Navigation Systems Designations/Updates	15
7.4 7.2(d)	7.2.6.2(d)	Employ Watch Map Ground Technique	20
7.4 7.2(e)	7.2.6 2(e)	Arrive at Target at Predetermined TOT	999
7.4.7.2(f)	7.2.6.2(f)	Navigate Using NVG Visual References	20
7.4 7 3(a)	7.2.6.3(a)	Monitor and Avoid Weather	10
7 4 7 3(b)	7.2.6.3(b)	Monitor and Avoid Obstacles	999



Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.4.7.3(c)	7.2.6.3(c)	Monitor and Avoid Terrain	999
7.4.7.3(d)	7.2.6.3(e)	Monitor and Avoid Other Aircraft	999
7.4.8.1(a)	7.2.7.1(a)	Monitor and Maintain Assigned Radar Sensor Search Parameters	3
7.4.8.1(b)	7.2.7.1(b)	Monitor and Maintain Radar Contact with Formation Members	4
7.4.8.1(c)	7.2.7.1(c)	Monitor and Maintain Radar Contact with Lateral Mission Elements	4
7.4.8.1(d)	7.2.7.1(d)	Monitor and Maintain Radar Contact with Unknowns	5
7.4.8.1(e)	7.2.7.1(e)	Advise on Radar Acquired Unknowns	10
7.4.8.1(f)	7.2.7.1(f)	Radar Sort Multiple Unknown Contacts	30
7.4.8.1(g)	7.2.7.1(h)	Monitor Tactical Picture on LINK 16/MIDS Displays	5
7.4.8.1(h)	7.2.7.1(g)	Interrogate Unknown Radar Contacts with IFF	15
7.4.8.2(a)	7.2.7.2(a)	Monitor and Maintain Assigned AMIRS Search Parameters	2
7.4.8.2(b)	7.2.7.2(b)	Monitor and Maintain AMIRS Contact with Formation Members	4
7.4.8.2(c)	7.2.7.2(c)	Monitor and Maintain AMIRS Contact with Lateral Mission Elements	4
7.4.8.2(d)	7.2.7.2(g)	Interrogate Unknown AMIRS Contacts with IFF	15
7.4.8.2(e)	7.2.7.2(d)	Monitor and Maintain AMIRS Contact with Unknowns	5
7.4.8.2(f)	7.2.7.2(e)	Advise on AMIRS Acquired Unknowns	10
7.4.8.2(g)	7.2.7.2(f)	Sort Multiple Unknown Contacts with AMIRS	30
7.4.8.3(a)	7.2.7.3(a)	Maintain Visual Search Patterns	5
7.4.8.3(b)	7.2.7.3(b)	Monitor and Maintain Visual Contact with Formation Members	2
7.4.8.3(c)	7.2.7.3(c)	Monitor and Maintain Visual Contact with Lateral Mission Elements	2
7.4.8.3(d)	7.2.7.3(d)	Monitor and Maintain Visual Contact with Unknowns	5
7.4.8.3(e)	7.2.7.3(e)	Advise on Visually Acquired Unknowns	15
7.4.8.3(f)	7.2.7.3(f)	Maintain NVG Visual Search Patterns	7
7.4.8.3(g)	7.2.7.3(g)	Monitor and Maintain NVG Contact with Formation Members	7
7.4.8.3(h)	7.2.7.3(h)	Monitor and Maintain NVG Contact with Lateral Mission Elements	7
7.4.8.3(i)	7.2.7.3(i)	Monitor and Maintain NVG Contact with Unknowns	7
7.5.1.1(a)	7.2.1.1(a)	Reduce Aircraft Emissions (EMCON Procedures)	7
7.5.1.1(b)	7.2.1.1(b)	Ingress at Low Altitude (Sophisticated Environment)	999
7.5.1.1(c)	7.2.1.1(c)	Ingress at Medium/High Altitude (Permissive Environment)	999
7.5.1.1(d)	7.2.1.1(d)	Descend to Low Altitude (Sophisticated Environment)	30

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.5.1.1(e)	7.2.1.1(e)	Adjust to Medium/High Altitude (Permissive Environment)	30
7.5.2.1(a)	7.2.5.2(a)	Optimize Formation for Tactical Situation	999
7.5.2.1(b)	7.5.2.1(b)	Conduct CAP	999
7.5.2.2(a)	7.5.2.2(a)	Employ Radar Search Sort and Target Contract	60
7.5.2.2(b)	7.4.2.1(a)	Conduct Visual Lookout	5
7.5.2.2(c)	7.4.2.1(b)	Respond to displayed RWR Threat Emission Information	10
7.5.2.2(d)	7.5.2.2(d)	Initiate and Monitor EID of Unknowns	10
7.5.2.2(e)	7.5.2.2(e)	Advise on Approaching Threats	7
7.5.2.2(f)	7.5.2.2(f)	Advise on Visually Acquired Threats	5
7.5.2.2(g)	7.5.2.2(g)	Acquire Enemy Contacts on LINK 16/MIDS Displays	30
7.5.2.2(h)	7.5.2.2(h)	VID Unknowns	5
7.5.2.2(i)	7.4.2.2(a)	Employ LINK 16/MIDS Secure Communications	20
7.5.2.2(j)	7.4.2.2(c)	Utilize C2 Directive and Descriptive Commentary	10
7.5.2.2(k)	7.4.2.1(e)	Utilize Lateral Mission Element Tactical Information	30
7.5.2.2(l)	7.5.2.2(l)	Employ AMIRS Search Sort and Target Contract	60
7.5.2.2(m)	7.2.7.1(g)	Interrogate Unknown Radar Contacts with IFF	15
7.5.2.2(n)	7.4.2.2(b)	Employ Have Quick II Secure Communications	20
7.5.2.2(o)	7.4.2.1(g)	Conduct Visual Lookout with NVG	7
7.5.2.2(p)	7.5.2.2(p)	VID Unknowns with NVG	7
7.5.2.3(a)	7.5.2.3(a)	Employ Tactical Deception	999
7.5.2.3(b)	7.5.2.3(b)	Dispense Chaff	3
7.5.2.3(c)	7.5.2.3(c)	Employ Jammers	15
7.5.2.3(d)	7.5.2.3(d)	Employ BVR Deception Tactics	300
7.5.2.4(a)	7.5.2.4(a)	Manoeuvre/Expose the Tactical Formation	30
7.5.2.4(b)	7.5.2.4(b)	Illuminate Enemy Air RWR	3
7.5.2.4(c)	7.5.2.4(c)	Enhance Enemy Air Radar Acquisition	20
7.5.2.4(d)	7.5.2.4(d)	Draw Enemy Air Away	300
7.5.2.4(e)	7.5.2.4(e)	Negate Enemy Air Weapons Employment	20
7.5.2.5(a)	7.5.2.5(a)	Deny Enemy Air Weapons Solution	999
7.5.2.5(b)	7.5.2.5(b)	Negate Enemy Air Weapons Employment	30

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.5.2.5(c)	7.5.2.5(c)	Employ Air-to-Air RMD	120
7.5.2.5(d)	7.5.2.5(d)	Employ Air-to-Air IRMD	60
7.5.2.5(e)	7.5.2.5(e)	Employ AAGD	45
7.5.2.5(f)	7.5.2.5(f)	Egress Engagement Safely	20
7.5.2.5(g)	7.4.2.1(b)	Respond to displayed RWR Threat Emission Information	10
7.5.2.5(h)	7.5.2.2(g)	Acquire Enemy Contacts on LINK 16/MIDS Displays	30
7.5.2.6(a)	7.5.2.6(a)	Manoeuvre Aircraft to Intercept Enemy	300
7.5.2.6(b)	7.5.2.5(b)	Negate Enemy Air Weapons Employment	30
7.5.2.6(c)	7.5.2.5(a)	Deny Enemy Air Weapons Solution	999
7.5.2.7(a)	7.5.2.7(a)	Manoeuvre to a Weapons Engagement Zone	60
7.5.2.7(b)	7.2.2.1(g)	Validate Weapons Solution Display	2
7.5.2.7(c)	7.5.2.7(c)	Employ Weapons	10
7.5.2.7(d)	7.5.2.7(d)	Maintain Post Attack Offensive	60
7.5.2.7(e)	7.5.2.5(f)	Egress Engagement Safely	20
7.5.2.7(f)	7.5.2.7(f)	Assess Post Merge ACM Options	30
7.5.2.7(g)	7.5.2.7(g)	Monitor Weapon Fly Out	50
7.5.3.1(a)	7.4.2.1(a)	Conduct Visual Lookout	5
7.5.3.1(b)	7.4.2.1(b)	Respond to displayed RWR Threat Emission Information	10
7.5.3.1(c)	7.4.2.1(c)	Acquire Enemy Targets on LINK 16/MIDS Displays	15
7.5.3.1(d)	7.4.2.1(d)	Find Target with Radar Search Sort and Target Contract	30
7.5.3.1(e)	7.4.2.1(e)	Utilize Lateral Mission Element Tactical Information	30
7.5.3.1(f)	7.4.2.1(f)	Find Target with AMIRS Search Sort and Target Contract	30
7.5.3.2(a)	7.4.2.2(a)	Report Target via LINK 16/MIDS Secure Communications	20
7.5.3.2(b)	7.4.2.2(b)	Report Target via Have Quick II Secure Communications	20
7.5.3.2(c)	7.4.2.2(c)	Utilize C2 Directive and Descriptive Commentary	10
7.5.3.2(d)	7.2.2.1(b)	Identify Target/DMPI Visually	5
7.5.3.2(e)	7.2.2.2(c)	Identify Target Area with Aircraft Sensors	10
7.5.3.2(f)	7.2.2.2(e)	Identify Target Using Map/Imagery/Onboard Sensors/LINK 16	10
7.5.3.2(g)	7.2.2.1(p)	Identify Target/DMPI with NVG	5
7.5.4.1(a)	7.2.2.1(a)	Conduct A/G Check	15

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7 5 4 1(b)	7.2.2.1(b)	Identify Initial Point Visually	5
7.5.4.1(c)	7 2.2.1(c)	Designate/Add Offset at Initial Point	25
7.5.4.1(d)	7.2.2.1(d)	Manoeuvre to Weapons Delivery Parameters	30
7.5.4.1(e)	7.2.2.1(b)	Identify Target/DMPI Visually	5
7.5.4.1(f)	7.2.2.1(f)	Conduct Element Split Attacks	70
7 5 4.1(g)	7.2 2.1(g)	Validate Weapons Solution Display	2
7.5.4.1(h)	7.2.2.1(h)	Deliver GP Weapons(Bombs/Rx/Cluster/Gx)	3
7.5.4.1(i)	7.2.2.1(i)	Conduct Safe Escape Manoeuvre	15
7.5.4.1(j)	7.2.2.1(j)	Conduct Frag Avoidance Manoeuvre	15
7.5 4.1(k)	7.2.2.1(k)	Conduct BDA	5
7.5 4 1(l)	7.2.2 1(l)	Conduct Coordinated Attacks with Other Aircraft/Elements/Sections	120
7.5.4.1(m)	7.2.2.1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays	5
7 5 4.1(n)	7.2.2.1(n)	Search for Initial Point	10
7.5.4.1(o)	7.2.2.1(o)	Search for Target	4
7.5.4.1(p)	7.2.2.1(p)	Identify Initial Point with NVG	5
7.5.4.1(q)	7.2.2.1(p)	Identify Target/DMPI with NVG	5
7 5.4.2(a)	7.2 2.1(a)	Conduct A/G Check	15
7.5.4.2(b)	7.2.2.2(b)	Designate Target Position	25
7 5.4 2(c)	7 2.2.2(c)	Identify Target Area with Aircraft Sensors	10
7.5.4.2(d)	7.2.2.1(d)	Manoeuvre to Weapons Delivery Parameters	30
7.5.4.2(e)	7.2.2.2(e)	Identify Target Using Map/Imagery/Onboard Sensors/LINK 16	10
7.5.4.2(f)	7.2 2.1(g)	Validate Weapons Solution Display	2
7.5.4.2(g)	7.2.2 2(g)	Deliver PGM (LGB/MAV/Adv PGM)	5
7 5 4.2(h)	7.2.2.2(h)	Conduct Self-Lasing LGB Delivery	50
7.5.4.2(i)	7.2 2.2(i)	Conduct Buddy-Lasing LGB Delivery	50
7 5.4.2(j)	7.2.2.2(j)	Update Target Designation	40
7 5.4.2(k)	7.2.2.1(i)	Conduct Safe Escape Manoeuvre	15
7.5.4.2(l)	7.2.2.1(k)	Conduct BDA	5
7.5.4.2(m)	7.2.2.1(l)	Conduct Coordinated Attacks with Other Aircraft/Elements/Sections	120
7.5.4 2(n)	7 2.2.1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays	5

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.5.4.2(o)	7.2.2.1(j)	Conduct Frag Avoidance Manoeuvre	15
7.5.5.1(a)	7.1.1.2(a)	Establish Radar Contact with Other Formation Members	20
7.5.5.1(b)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays	5
7.5.5.1(c)	7.1.1.3(c)	Conduct Formation Join-up	60
7.5.5.1(d)	7.1.1.2(f)	Establish Visual Contact with Other Formation Members	10
7.5.5.1(e)	7.1.1.2(h)	Establish NVG Contact with Other Formation Members	10
7.5.5.2(a)	7.2.1.1(a)	Allow Aircraft Emissions for Identification	7
7.5.5.2(b)	7.2.3.2(b)	Egress at Low Altitude	999
7.5.5.2(c)	7.2.3.2(c)	Egress at Medium/High Altitude	999
7.5.5.2(d)	7.2.3.2(d)	Conduct Lame Duck Procedures	999
7.5.5.2(e)	7.2.1.1(d)	Descend to Low Altitude (Sophisticated Environment)	30
7.5.5.2(f)	7.2.1.1(e)	Adjust to Medium/High Altitude (Permissive Environment)	30
7.5.6.1(a)	7.2.4.1(a)	Pass IFREP	15
7.5.6.2(a)	7.2.4.2(a)	Conduct BD Check	90
7.5.6.2(b)	7.2.4.2(b)	Conduct Fence Out Check	15
7.5.7.1(a)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays	5
7.5.7.1(b)	7.2.5.1(a)	Establish Tactical Roles - Tactical Leads and Wingmen	999
7.5.7.1(c)	7.2.5.1(c)	Execute Manoeuvre Turns	30
7.5.7.1(d)	7.2.5.1(b)	Maintain Aircraft Control and Flight Position	999
7.5.7.1(e)	7.2.5.2(f)	Communicate with Formation Members via Discreet frequency	5
7.5.7.1(f)	7.2.5.2(g)	Communicate with Formation Members via Data Link	10
7.5.7.2(a)	7.2.5.2(a)	Optimize Formation for Tactical Situation	999
7.5.7.2(b)	7.2.5.2(b)	Maintain Visual Mutual Support	999
7.5.7.2(c)	7.2.5.2(c)	Maintain Positional Mutual Support	999
7.5.7.2(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays	5
7.5.7.2(e)	7.2.5.2(e)	Maintain Visual Mutual Support with NVG	999
7.5.8.1(a)	7.2.6.1(a)	Maintain Ground Track	999
7.5.8.1(b)	7.2.6.1(b)	Adhere to ACO	999
7.5.8.1(c)	7.2.6.1(c)	Adjust G/S to Make Tasking Timings	10
7.5.8.1(d)	7.2.6.1(d)	Monitor and Avoid ACO Restricted Areas	999

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.5.8.2(a)	7.2.6.2(a)	Navigate Using Visual References	10
7.5.8.2(b)	7.2.6.2(b)	Navigate Using Sensors Information Displayed on HSD and DDIs	10
7.5.8.2(c)	7.2.6.2(c)	Perform Navigation Systems Designations/Updates	15
7.5.8.2(d)	7.2.6.2(d)	Employ Watch Map Ground Technique	20
7.5.8.2(e)	7.2.6.2(e)	Arrive at Target at Predetermined TOT	999
7.5.8.2(f)	7.2.6.2(f)	Navigate Using NVG Visual References	20
7.5.8.3(a)	7.2.6.3(a)	Monitor and Avoid Weather	10
7.5.8.3(b)	7.2.6.3(b)	Monitor and Avoid Obstacles	999
7.5.8.3(c)	7.2.6.3(c)	Monitor and Avoid Terrain	999
7.5.8.3(d)	7.2.6.3(e)	Monitor and Avoid Other Aircraft	999
7.5.9.1(a)	7.2.7.1(d)	Monitor and Maintain Radar Contact with Unknowns	5
7.5.9.1(b)	7.2.7.1(e)	Advise on Radar Acquired Unknowns	10
7.5.9.1(c)	7.2.7.1(f)	Radar Sort Multiple Unknown Contacts	30
7.5.9.1(d)	7.2.7.1(a)	Monitor and Maintain Assigned Radar Sensor Search Parameters	3
7.5.9.1(e)	7.2.7.1(b)	Monitor and Maintain Radar Contact with Formation Members	4
7.5.9.1(f)	7.2.7.1(c)	Monitor and Maintain Radar Contact with Lateral Mission Elements	4
7.5.9.1(g)	7.2.7.1(h)	Monitor Tactical Picture on LINK 16/MIDS Displays	5
7.5.9.1(h)	7.2.7.1(g)	Interrogate Unknown Radar Contacts with IFF	15
7.5.9.2(a)	7.2.7.2(a)	Monitor and Maintain Assigned AMIRS Search Parameters	2
7.5.9.2(b)	7.2.7.2(b)	Monitor and Maintain AMIRS Contact with Formation Members	4
7.5.9.2(c)	7.2.7.2(c)	Monitor and Maintain AMIRS Contact with Lateral Mission Elements	4
7.5.9.2(d)	7.2.7.2(g)	Interrogate Unknown AMIRS Contacts with IFF	15
7.5.9.2(e)	7.2.7.2(d)	Monitor and Maintain AMIRS Contact with Unknowns	5
7.5.9.2(f)	7.2.7.2(e)	Advise on AMIRS Acquired Unknowns	10
7.5.9.2(g)	7.2.7.2(f)	Sort Multiple Unknown Contacts with AMIRS	30
7.5.9.3(a)	7.2.7.3(a)	Maintain Visual Search Patterns	5
7.5.9.3(b)	7.2.7.3(b)	Monitor and Maintain Visual Contact with Formation Members	2
7.5.9.3(c)	7.2.7.3(c)	Monitor and Maintain Visual Contact with Lateral Mission Element	2
7.5.9.3(d)	7.2.7.3(d)	Monitor and Maintain Visual Contact with Unknowns	5
7.5.9.3(e)	7.2.7.3(e)	Advise on Visually Acquired Unknowns	15

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.5.9.3(f)	7.2.7.3(f)	Maintain NVG Visual Search Patterns	7
7 5.9 3(g)	7.2.7.3(g)	Monitor and Maintain NVG Contact with Formation Members	7
7.5.9.3(h)	7 2.7.3(h)	Monitor and Maintain NVG Contact with Lateral Mission Elements	7
7.5.9 3(i)	7.2.7.3(i)	Monitor and Maintain NVG Contact with Unknowns	7
7.6 1 1(a)	7.2.5.1(a)	Establish Tactical Roles - Tactical Leads and Wingmen	999
7.6.1.1(b)	7.2.5.1(b)	Maintain Aircraft Control and Flight Position	999
7.6.1.1(c)	7.2.5.1(c)	Execute Manoeuvre Turns	30
7.6.1.2(a)	7.2.5.2(a)	Optimize Formation for Tactical Situation	999
7 6 1.2(b)	7.2 5.2(b)	Maintain Visual Mutual Support	999
7 6 1.2(c)	7 2.5.2(c)	Maintain Positional Mutual Support	999
7.6.1.2(d)	7.2.5.2(e)	Maintain Visual Mutual Support with NVG	999
7 6 1.3(a)	7.2.6.1(a)	Maintain Ground Track	999
7.6.1.3(b)	7.2 6.1(b)	Adhere to ACO	999
7.6.1.3(c)	7.2.6.1(c)	Adjust G/S to Make Tasking Timings	10
7.6 1 3(d)	7.2.6 1(d)	Monitor and Avoid ACO Restricted Areas	999
7.6 1 4(a)	7.2.6 2(a)	Navigate Using Visual References	10
7.6 1.4(b)	7.2.6.2(b)	Navigate Using Sensors Information Displayed on HSD and DDIs	10
7.6.1.4(c)	7.2.6.2(c)	Perform Navigation Systems Designations/Updates	15
7.6.1.4(d)	7.2.6.2(d)	Employ Watch Map Ground Technique	20
7 6 1.4(e)	7.2 6.2(e)	Arrive at Target at Predetermined TOT	999
7.6.1.4(f)	7.2.6.2(f)	Navigate Using NVG Visual References	20
7 6 1.5(a)	7.2.6.3(a)	Monitor and Avoid Weather	10
7.6.1.5(b)	7.2.6.3(b)	Monitor and Avoid Obstacles	999
7.6.1.5(c)	7.2.6.3(c)	Monitor and Avoid Terrain	999
7.6.1.6(a)	7.2.7.1(a)	Monitor and Maintain Assigned Radar Sensor Search Parameters	3
7.6.1.6(b)	7.2 7.1(b)	Monitor and Maintain Radar Contact with Formation Members	4
7.6.1.6(c)	7.2.7.1(c)	Monitor and Maintain Radar Contact with Lateral Mission Elements	4
7.6.1 6(d)	7.2.7.1(d)	Monitor and Maintain Radar Contact with Unknowns	5
7.6.1.6(e)	7.2.7.1(e)	Advise on Radar Acquired Unknowns	10
7 6 1.6(f)	7.2.7.1(f)	Radar Sort Multiple Unknown Contacts	30

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.6.1.6(g)	7.2.7.1(h)	Monitor Tactical Picture on LINK 16/MIDS Displays	5
7.6.1.6(h)	7.2.7.1(g)	Interrogate Unknown Radar Contacts with IFF	15
7.6.1.7(a)	7.2.7.2(a)	Monitor and Maintain Assigned AMIRS Search Parameters	2
7.6.1.7(b)	7.2.7.2(b)	Monitor and Maintain AMIRS Contact with Formation Members	4
7.6.1.8(a)	7.2.7.3(a)	Maintain Visual Search Patterns	5
7.6.1.8(b)	7.2.7.3(b)	Monitor and Maintain Visual Contact with Formation Members	2
7.6.1.8(c)	7.2.7.3(c)	Monitor and Maintain Visual Contact with Lateral Mission Element	2
7.6.1.8(d)	7.2.7.3(d)	Monitor and Maintain Visual Contact with Unknowns	5
7.6.1.8(e)	7.2.7.3(e)	Advise on Visually Acquired Unknowns	15
7.6.1.8(f)	7.2.7.3(f)	Maintain NVG Visual Search Patterns	7
7.6.1.8(g)	7.2.7.3(g)	Monitor and Maintain NVG Contact with Formation Members	7
7.6.1.8(h)	7.2.7.3(h)	Monitor and Maintain NVG Contact with Lateral Mission Elements	7
7.6.1.8(i)	7.2.7.3(i)	Monitor and Maintain NVG Contact with Unknowns	7
7.6.2.1(a)	7.6.2.1(a)	Generate Positive Closure	2
7.6.2.1(b)	7.6.2.1(b)	Maintain Positive Closure	5
7.6.2.1(c)	7.6.2.1(c)	Monitor and Obey AAR Lights	999
7.6.2.2(a)	7.6.2.2(a)	Position Pitch Ladders	5
7.6.2.2(b)	7.6.2.2(b)	Align Probe	5
7.6.2.2(c)	7.6.2.1(c)	Monitor and Obey AAR Lights	999
7.6.2.3(a)	7.6.2.3(a)	Pick Approach Reference	2
7.6.2.3(b)	7.6.2.3(b)	Maintain Attitude References	10
7.6.2.3(c)	7.6.2.3(c)	Make Contact	2
7.6.2.3(d)	7.6.2.1(c)	Monitor and Obey AAR Lights	999
7.6.3.1(a)	7.6.3.1(a)	Generate Maximum Fuel Transfer	5
7.6.3.1(b)	7.6.2.1(c)	Monitor and Obey AAR Lights	999
7.6.3.2(a)	7.6.3.1(a)	Maintain Hose in Trail Position	5
7.6.3.2(b)	7.6.2.3(c)	Maintain Probe Contact	2
7.6.3.2(c)	7.6.2.1(c)	Monitor and Obey AAR Lights	999
7.6.3.3(a)	7.6.3.3(a)	Generate Negative Closure	3
7.6.3.3(b)	7.6.2.3(b)	Maintain Attitude References	10



Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7 6 3.3(c)	7.6.3 3(c)	Move to Astern Position	5
7.6 3.3(d)	7.6.2.1(c)	Monitor and Obey AAR Lights	999
7 6 3 3(e)	7.6.3.3(e)	Move to Outboard / Echelon Position	10
7 6 4.1(a)	7.6.4.1(a)	Establish Departure Echelon Position	5
7.6.4.1(b)	7.6.4 1(b)	Request Clearance to Depart	5
7 6 4.1(c)	7.6.4.1(c)	Depart	30
7.6.4.2(a)	7.2.5.1(a)	Establish Tactical Roles - Tactical Leads and Wingmen	999
7.6 4 2(b)	7.2.5.1(b)	Maintain Aircraft Control and Flight Position	999
7.6.4 2(c)	7.2.5.1(c)	Execute Manoeuvre Turns	30
7.6.4.2(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays	5
7.6.4.3(a)	7.2.5.2(a)	Optimize Formation for Tactical Situation	999
7.6.4 3(b)	7.2.5.2(b)	Maintain Visual Mutual Support	999
7.6.4 3(c)	7.2.5.2(c)	Maintain Positional Mutual Support	999
7.6.4 3(d)	7.1.1.3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays	5
7.6.4.3(e)	7.2.5.2(e)	Maintain Visual Mutual Support with NVG	999
7.6.4.4(a)	7.2.6.1(a)	Maintain Ground Track	999
7.6.4.4(b)	7.2.6.1(b)	Adhere to ACO	999
7.6.4.4(c)	7.2.6.1(c)	Adjust G/S to Make Tasking Timings	10
7.6 4.4(d)	7.2.6.1(d)	Monitor and Avoid ACO Restricted Areas	999
7.6.4.5(a)	7.2.6.2(a)	Navigate Using Visual References	10
7.6.4.5(b)	7.2.6.2(b)	Navigate Using Sensors Information Displayed on HSD and DDIs	10
7.6.4.5(c)	7 2 6.2(c)	Perform Navigation Systems Designations/Updates	15
7 6.4.5(d)	7.2.6.2(d)	Employ Watch Map Ground Technique	20
7.6.4.5(e)	7.2.6.2(e)	Arrive at Target at Predetermined TOT	999
7.6.4.5(f)	7.2.6.2(f)	Navigate Using NVG Visual References	20
7.6.4.6(a)	7.2.6.3(a)	Monitor and Avoid Weather	10
7.6.4.6(b)	7.2.6.3(b)	Monitor and Avoid Obstacles	999
7 6 4.6(c)	7.2 6 3(c)	Monitor and Avoid Terrain	999
7 6 4.6(d)	7.2.6.3(e)	Monitor and Avoid Other Aircraft	999
7 6.4.7(a)	7.2.7.1(a)	Monitor and Maintain Assigned Radar Sensor Search Parameters	3

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.6.4.7(b)	7.2.7.1(b)	Monitor and Maintain Radar Contact with Formation Members	4
7.6.4.7(c)	7.2.7.1(c)	Monitor and Maintain Radar Contact with Lateral Mission Elements	4
7.6.4.7(d)	7.2.7.1(d)	Monitor and Maintain Radar Contact with Unknowns	5
7.6.4.7(e)	7.2.7.1(e)	Advise on Radar Acquired Unknowns	10
7.6.4.7(f)	7.2.7.1(f)	Radar Sort Multiple Unknown Contacts	30
7.6.4.7(g)	7.2.7.1(h)	Monitor Tactical Picture on LINK 16/MIDS Displays	5
7.6.4.7(h)	7.2.7.1(g)	Interrogate Unknown Radar Contacts with IFF	15
7.6.4.8(a)	7.2.7.2(a)	Monitor and Maintain Assigned AMIRS Search Parameters	2
7.6.4.8(b)	7.2.7.2(b)	Monitor and Maintain AMIRS Contact with Formation Members	4
7.6.4.8(c)	7.2.7.2(c)	Monitor and Maintain AMIRS Contact with Lateral Mission Element	4
7.6.4.8(d)	7.2.7.2(g)	Interrogate Unknown AMIRS Contacts with IFF	15
7.6.4.8(e)	7.2.7.2(d)	Monitor and Maintain AMIRS Contact with Unknowns	5
7.6.4.8(f)	7.2.7.2(e)	Advise on AMIRS Acquired Unknowns	10
7.6.4.8(g)	7.2.7.2(f)	Sort Multiple Unknown Contacts with AMIRS	30
7.6.4.9(a)	7.2.7.3(a)	Maintain Visual Search Patterns	5
7.6.4.9(b)	7.2.7.3(b)	Monitor and Maintain Visual Contact with Formation Members	2
7.6.4.9(c)	7.2.7.3(c)	Monitor and Maintain Visual Contact with Lateral Mission Element	2
7.6.4.9(d)	7.2.7.3(d)	Monitor and Maintain Visual Contact with Unknowns	5
7.6.4.9(e)	7.2.7.3(e)	Advise on Visually Acquired Unknowns	15
7.6.4.9(f)	7.2.7.3(f)	Maintain NVG Visual Search Patterns	7
7.6.4.9(g)	7.2.7.3(g)	Monitor and Maintain NVG Contact with Formation Members	7
7.6.4.9(h)	7.2.7.3(h)	Monitor and Maintain NVG Contact with Lateral Mission Elements	7
7.6.4.9(i)	7.2.7.3(i)	Monitor and Maintain NVG Contact with Unknowns	7
7.7.1.1(a)	7.5.2.2(a)	Employ Radar Search Sort and Target Contract	60
7.7.1.1(b)	7.4.2.1(a)	Conduct Visual Lookout	5
7.7.1.1(c)	7.4.2.1(b)	Respond to displayed RWR Threat Emission Information	10
7.7.1.1(d)	7.5.2.2(d)	EID Unknowns	10
7.7.1.1(e)	7.5.2.2(e)	Advise on Approaching Threats	7
7.7.1.1(f)	7.5.2.2(f)	Advise on Visually Acquired Threats	5
7.7.1.1(g)	7.5.2.2(g)	Acquire Enemy Contacts on LINK 16/MIDS Displays	30

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.7 1.1(h)	7.5.2.2(h)	VID Unknowns	5
7.7 1 1(i)	7.4.2.2(a)	Employ LINK 16/MIDS Secure Communications	20
7.7 1.1(j)	7.4.2 2(c)	Utilize C2 Directive and Descriptive Commentary	10
7 7.1.1(k)	7.4 2.1(e)	Utilize Lateral Mission Element Tactical Information	30
7.7.1 1(l)	7.5.2.2(l)	Employ AMIRS Search Sort and Target Contract	60
7.7 1 1(m)	7.2.7.1(g)	Interrogate Unknown Radar Contacts with IFF	15
7.7.1.1(n)	7.4.2.2(b)	Employ Have Quick II Secure Communications	20
7.7 1 1(o)	7.4.2.1(g)	Conduct Visual Lookout with NVG	7
7.7.1.1(p)	7.5.2.2(p)	VID Unknowns with NVG	7
7.7.2.1(a)	7.7.2.1(a)	Manoeuvre the Tactical Formation	999
7 7.2.1(b)	7.7.2.1(b)	Avoid Illuminating of the Enemy Air RWR	5
7.7.2.1(c)	7.7.2.1(c)	Configure the Tactical Formation	45
7.7.2.1(d)	7.7.2.1(d)	Establish Diverging Paths	10
7.7 2.1(e)	7.7.2.1(e)	React Aggressively to Enemy Air Manoeuvre	5
7.7.2.1(f)	7.7.2.1(f)	Limit Exposure Using Terrain Masking	300
7.7 2.1(g)	7.4.2.1(b)	Respond to displayed RWR Threat Emission Information	10
7 7.2.1(h)	7.5 2.2(g)	Acquire Enemy Contacts on LINK 16/MIDS Displays	30
7.7.2.2(a)	7.5 2.3(a)	Employ Tactical Deception	999
7.7 2 2(b)	7 5 2.3(b)	Dispense Chaff	3
7.7.2.2(c)	7.5.2.3(c)	Employ Jammers	15
7 7.2 2(d)	7.5.2.3(d)	Employ BVR Deception Tactics	300
7.7.2.3(a)	7.5.2 4(a)	Manoeuvre/Expose the Tactical Formation	30
7.7.2.3(b)	7.5.2.4(b)	Illuminate Enemy Air RWR	3
7.7.2.3(c)	7.5.2.4(c)	Enhance Enemy Air Radar Acquisition	20
7 7.2.3(d)	7.5.2.4(d)	Draw Enemy Air Away	300
7 7.2.3(e)	7.5.2.4(e)	Negate Enemy Air Weapons Employment	20
7.7.2.4(a)	7 5 2.5(a)	Deny Enemy Air Weapons Solution	999
7 7.2.4(b)	7 5.2.5(b)	Negate Enemy Air Weapons Employment	30
7.7.2.4(c)	7 5.2.5(c)	Employ Air-to-Air RMD	120
7.7.2 4(d)	7.5 2.5(d)	Employ Air-to-Air IRMD	60

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7 7.2.4(e)	7.5.2.5(e)	Employ AAGD	45
7 7 2.4(f)	7 5.2.5(f)	Egress Engagement Safely	20
7.7.2.4(g)	7.4.2.1(b)	Respond to displayed RWR Threat Emission Information	10
7.7 2 4(h)	7.5.2.2(g)	Acquire Enemy Contacts on LINK 16/MIDS Displays	30
7.7 3 1(a)	7.5.2 3(a)	Employ Tactical Deception	999
7.7.3.1(b)	7.5.2.3(b)	Dispense Chaff	3
7.7 3 1(c)	7.5.2.3(c)	Employ Jammers	15
7.7 3 1(d)	7.5.2.3(d)	Employ BVR Deception Tactics	300
7.7.3.2(a)	7.5.2.6(a)	Manoeuvre Aircraft to Intercept Enemy	300
7.7.3.2(b)	7.5.2.5(b)	Negate Enemy Air Weapons Employment	30
7.7.3.2(c)	7.5.2.5(a)	Deny Enemy Air Weapons Solution	999
7.7.3.3(a)	7.5.2.4(a)	Manoeuvre/Expose the Tactical Formation	30
7.7.3.3(b)	7.5.2.4(b)	Illuminate Enemy Air RWR	3
7.7.3.3(c)	7.5.2.4(c)	Enhance Enemy Air Radar Acquisition	20
7 7.3 3(d)	7.5.2.4(d)	Draw Enemy Air Away	300
7 7.3.3(e)	7.5.2.4(e)	Negate Enemy Air Weapons Employment	20
7.7.3.5(a)	7.5.2.7(a)	Manoeuvre to a Weapons Engagement Zone	60
7 7.3.5(b)	7.2.2.1(g)	Validate Weapons Solution Display	2
7 7.3.5(c)	7.5.2.7(c)	Employ Weapons	10
7 7.3.5(d)	7.5.2.7(d)	Maintain Post Attack Offensive	60
7.7.3.5(e)	7 5 2.5(f)	Egress Engagement Safely	20
7 7.3.5(f)	7.5.2.7(f)	Assess Post Merge ACM Options	30
7.7.3.5(g)	7.5.2.7(g)	Monitor Weapon Fly Out	50
7 7.3.6(a)	7.5.2.5(a)	Deny Enemy Air Weapons Solution	999
7 7 3.6(b)	7 5 2.5(b)	Negate Enemy Air Weapons Employment	30
7 7 3 6(c)	7 5 2.5(c)	Employ Air-to-Air RMD	120
7.7 3.6(d)	7.5.2.5(d)	Employ Air-to-Air IRMD	60
7.7.3.6(e)	7.5.2.5(e)	Employ AAGD	45
7.7 3.6(f)	7.5.2.5(f)	Egress Engagement Safely	20
7.7.3.6(g)	7.4.2.1(b)	Respond to displayed RWR Threat Emission Information	10

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.7 3.6(h)	7.5.2 2(g)	Acquire Enemy Contacts on LINK 16/MIDS Displays	30
7 7.3.6(i)	7.7.3.6(i)	Jettison External Stores	3
7.7.4.1(a)	7.4.2.1(a)	Conduct Visual Lookout	5
7.7 4.1(b)	7.4.2.1(b)	Respond to displayed RWR Threat Emission Information	10
7.7.4.1(c)	7.5.2.2(g)	Acquire Enemy Contacts on LINK 16/MIDS Displays	30
7.7.4 1(d)	7 4.2.1(g)	Conduct Visual Lookout with NVG	7
7.7.4 1(e)	7.5.2.2(f)	Advise on Visually Acquired SAM/AAA	5
7.7.5.1(a)	7.7 5.1(a)	Employ High Speed Flight	999
7.7.5.1(b)	7.7 5.1(b)	Employ Low Speed Flight	999
7.7.5.1(c)	7.7.5.1(c)	Avoid Threat Envelopes	15
7.7.5.1(d)	7.2.2.1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays	5
7.7 5 2(a)	7.4.2.1(b)	Analyse displayed RWR Threat Emission Information	10
7.7.5.2(b)	7.5.2.3(c)	Employ Jammers	15
7.7 5.2(c)	7.5.2.3(b)	Dispense Chaff	3
7 7.5.3(a)	7.7.2.1(f)	Limit Exposure Using Terrain Masking	300
7.7.5.3(b)	7.7.5.3(b)	Employ Atmospheric Phenomena	60
7.7.6.1(a)	7.5 2.3(c)	Employ Jammers	15
7.7.6.1(b)	7 7.6.1(b)	Employ Defensive Counter Measures	60
7.7 6 2(a)	7.7.2.1(f)	Limit Exposure Using Terrain Masking	300
7.7.6.2(b)	7.7.5.3(b)	Employ Atmospheric Phenomena	60
7.7 6.3(a)	7.7.6.3(a)	Employ Surface-to-Air RMD	60
7.7.6 3(b)	7.7.6.3(b)	Employ Surface-to-Air IRMD	60
7.7.6 3(c)	7.5 2.5(e)	Employ AAAD	45
7.7.6 3(d)	7.7.3.6(i)	Jettison External Stores	3
7.7.6 4(a)	7.2.2.1(a)	Conduct A/G Check	15
7.7.6.4(b)	7.2.2.1(b)	Identify Initial Point Visually	5
7 7 6.4(c)	7.2 2 1(c)	Designate/Add Offset at Initial Point	25
7 7.6.4(d)	7.2 2.1(d)	Manoeuvre to Weapons Delivery Parameters	30
7.7.6.4(e)	7 2.2.1(b)	Identify Target/DMPI Visually	5
7.7.6.4(f)	7.2.2.1(f)	Conduct Element Split Attacks	70

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7 7.6.4(g)	7 2.2.1(g)	Validate Weapons Solution Display	2
7.7.6 4(h)	7 2.2.1(h)	Deliver GP Weapons(Bombs/Rx/Cluster/Gx)	3
7 7 6.4(I)	7.2.2.1(i)	Conduct Safe Escape Manoeuvre	15
7 7 6.4(j)	7.2.2.1(j)	Conduct Frag Avoidance Manoeuvre	15
7.7 6.4(k)	7.2.2.1(k)	Conduct BDA	5
7.7.6.4(l)	7.2.2.1(l)	Conduct Coordinated Attacks with Other Aircraft/Elements/Sections	120
7 7 6.4(m)	7 2.2.1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays	5
7.7.6 4(n)	7.2.2.2(b)	Designate Target Position	25
7.7.6.4(o)	7.2.2.2(c)	Identify Target Area with Aircraft Sensors	10
7.7.6.4(p)	7.2 2.2(e)	Identify Target Using Map/Imagery/Onboard Sensors/LINK 16	10
7.7 6 4(q)	7.2.2.2(g)	Deliver PGM (LGB/MAV/Adv PGM)	5
7.7.6.4(r)	7.2.2.2(h)	Conduct Self-Lasing LGB Delivery	50
7.7.6.4(s)	7.2.2.2(i)	Conduct Buddy-Lasing LGB Delivery	50
7.7.6.4(t)	7.2.2.2(j)	Update Target Designation	40
7 7.6.4(u)	7.2.2.1(i)	Conduct Safe Escape Manoeuvre	15
7.7.6.4(v)	7.2.2.1(n)	Search for Initial Point	10
7.7.6.4(w)	7.2.2.1(o)	Search for Target	4
7.7.6.4(x)	7.2.2.1(p)	Identify Initial Point with NVG	5
7.7.6 4(y)	7.2.2.1(p)	Identify Target/DMPI with NVG	5
7.7.6.4(z)	7.2.2.1(j)	Conduct Frag Avoidance Manoeuvre	15
7.8.1 1(a)	7.8.1.1(a)	Monitor Common Secure Voice Frequencies	999
7.8.1.1(b)	7.8 1.1(a)	Monitor Discreet Voice Frequencies	999
7.8 1 1(c)	7.8.1.1(c)	Monitor Broadcast Frequencies	999
7.8.2 1(a)	7.8.1.1(a)	Monitor Secure Voice Frequencies	999
7.8.2.1(b)	7 8.1.1(a)	Monitor Broadcast Frequencies	999
7.8.2.1(c)	7.8.1.1(c)	Monitor Broadcast Frequencies	999
7.8.3 1(b)	7.8 3.1(b)	Monitor Secure LINK 16 Frequencies	999
7.8.4.1(a)	7.8.1.1(a)	Monitor UHF Guard Frequency and Monitoring Mode	999
7.8.4.1(b)	7.8.1.1(a)	Monitor AM/FM Guard Frequency and Monitoring Mode	999
7.9.1 1(a)	7.9.1.1(a)	Monitor and Manage Tank Pressurization and Vent System	999

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.9.1.1(b)	7.9.1.1(b)	Monitor and Manage Fuel Quantity Indicating System	999
7.9.1.1(c)	7.9.1.1(c)	Monitor and Manage Fuel Feed Transfer	999
7.9.1.1(d)	7.9.1.1(d)	Monitor and Compare Fuel Flow Indications	999
7.9.1.1(e)	7.9.1.1(e)	Monitor and Manage Feed Tank Level	999
7.9.1.1(f)	7.9.1.1(f)	Monitor and Manage Fuel LO Indication	999
7.9.1.1(g)	7.9.1.1(g)	Monitor and Manage Bingo Fuel	999
7.9.1.1(h)	7.9.1.1(h)	Monitor and Manage Tactical Fuel	999
7.9.10.1(a)	7.9.10.1(a)	Monitor and Manage EGI Equipment	999
7.9.10.1(b)	7.9.10.1(b)	Monitor and Manage Navigation Aid Equipment	999
7.9.11.1(a)	7.9.11.1(a)	Monitor and Manage Radar	999
7.9.11.1(b)	7.9.11.1(b)	Monitor and Manage Jammers	999
7.9.11.1(d)	7.9.11.1(d)	Monitor and Manage RWR	999
7.9.11.1(e)	7.9.11.1(e)	Monitor and Manage AN/ALE-47	999
7.9.11.1(f)	7.9.11.1(f)	Monitor and Manage IFF Interrogator/Transponder (CIT)	999
7.9.11.1(g)	7.9.11.1(g)	Monitor and Manage LINK 16/MIDS	999
7.9.11.1(i)	7.9.11.1(i)	Monitor and Manage Stores Management Set	999
7.9.11.1(j)	7.9.11.1(j)	Monitor and Manage Weapons	999
7.9.11.1(k)	7.9.11.1(k)	Monitor and Manage Have Quick II	999
7.9.11.1(l)	7.9.11.1(l)	Monitor and Manage NVIS	999
7.9.12.1(a)	7.9.12.1(a)	Monitor and Manage Standard Exterior Lighting	999
7.9.12.1(b)	7.9.12.1(b)	Monitor and Manage Standard Interior Lighting	999
7.9.12.1(c)	7.9.12.1(c)	Monitor and Manage NVG Modified Exterior Lighting	999
7.9.12.1(d)	7.9.12.1(d)	Monitor and Manage NVG Modified Interior Lighting	999
7.9.13.1(a)	7.9.13.1(a)	Monitor and Manage Landing Gear System	999
7.9.13.1(b)	7.9.13.1(b)	Monitor and Manage Brake System	999
7.9.13.1(c)	7.9.13.1(c)	Monitor and Manage Arresting Hook System	999
7.9.2.1(a)	7.9.2.1(a)	Monitor Hydraulic 1 and 2 Pump Pressure Indicators and Reservoirs	999
7.9.2.1(b)	7.9.2.1(b)	Monitor and Manage APU and Brake Accumulators	999
7.9.3.1(a)	7.9.3.1(a)	Monitor and Manage Engine Performance	999
7.9.3.1(b)	7.9.3.1(b)	Monitor and Manage Throttle Controls	999

Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7 9.3.1(c)	7.9.3.1(c)	Monitor and Manage Engine Anti-Ice System	999
7.9.3.1(d)	7.9.3.1(d)	Monitor and Manage Automatic Throttle Control (ATC)	999
7 9 3 1(e)	7 9 3.1(e)	Monitor Inspection of Inlet Duct Doors	999
7.9.3.1(f)	7.9.3.1(f)	Monitor and Manage Secondary Power Systems	999
7.9.4 1(a).	7.9.4 1(a).	Monitor and Manage Electrical Circuit Breakers	999
7.9.4.1(b)	7.9.4.1(b)	Monitor and Manage Generators	999
7.9 4 1(c)	7.9.4.1(c)	Monitor and Manage Transformer Rectifiers	999
7 9 4.1(d)	7.9.4.1(d)	Monitor and Manage Batteries	999
7 9.5.1(a)	7.9.5.1(a)	Monitor and Manage Pilot Controls	999
7.9.5.1(b)	7.9.5.1(b)	Monitor and Manage Primary Flight Controls	999
7 9.5.1(c)	7.9 5.1(c)	Monitor and Manage Secondary Flight Controls	999
7.9.5.1(d)	7.9.5.1(d)	Monitor and Manage FCS Status Display	999
7.9.5.1(e)	7.9.5.1(e)	Monitor and Manage Departure Warning Tone	999
7.9.5.1(f)	7.9.5.1(f)	Monitor and Manage Spin Recovery System	999
7.9 5 1(g)	7.9.5.1(g)	Monitor and Manage Control Augmentation System	999
7 9.5.1(h)	7.9.5.1(h)	Monitor and Manage Flight Control Computers (FCC)	999
7 9.5.1(i)	7.9 5.1(i)	Monitor and Manage CAS Backup Systems	999
7.9.5.1(j)	7.9.5 1(j)	Monitor and Manage Wing Fold System	999
7.9.5.1(k)	7.9.5.1(k)	Monitor and Manage Automatic Flight Control System	999
7.9.6.1(a)	7.9.6.1(a)	Monitor and Manage Warning/Caution/Advisory Lights and Display	999
7.9.6.1(b)	7.9.6.1(b)	Monitor and Manage Master Caution Light and Tone	999
7 9.6.1(c)	7.9.6.1(c)	Monitor Voice Alert System	999
7.9.6.1(d)	7.9.6.1(d)	Monitor and Manage GPWS	999
7.9.6 1(e)	7.9.6.1(e)	Monitor and Manage Fire Detection/Extinguishing System	999
7 9.6.1(f)	7.9.6.1(f)	Monitor and Manage Canopy System	999
7.9.6.1(g)	7 9.6.1(g)	Monitor and Manage Ejection Seat System	999
7.9.6.1(h)	7 9.6.1(h)	Monitor and Manage Life Support Systems	999
7.9.7.1(a)	7.9 7 1(a)	Monitor and Manage Bleed Air Systems	999
7.9.7.1(b)	7 9.7.1(b)	Monitor and Manage Windshield Anti-Ice and Rain Removal System	999
7.9.7.1(c)	7.9.7.1(c)	Monitor and Manage Avionics Cooling and Pressurization	999



Goal ID	Source Goal	Goal Label	Goal Completion Time (s)
7.9 7 1(d)	7.9.7.1(d)	Monitor and Manage Cockpit Air-Conditioning and Pressurization	999
7.9.8.1(a)	7.9.8.1(a)	Monitor and Manage Pitot Static System	999
7.9 8 1(b)	7.9.8.1(b)	Monitor and Manage Standby Instruments	999
7.9 8 1(c)	7 9.8.1(c)	Monitor and Manage Radar Altimeter	999
7.9 8.1(d)	7.9 8 1(d)	Monitor and Manage AOA Indexer	999
7.9 8 1(e)	7.9.8 1(e)	Monitor and Manage Clock	999
7.9.9.1(a)	7.9 9 1(a)	Monitor and Manage Mission Computer System	999
7.9 9.1(b)	7.9.9.1(b)	Monitor and Manage Cockpit Controls and Displays	999
7.9.9.1(c)	7.9.9.1(c)	Monitor and Manage UFC	999
7.9.9 7(d)	7.9 9.7(d)	Monitor and Manage CVRS	999
7.9 9 7(e)	7.9.9.7(e)	Monitor and Manage Digital Displays VRS	999

# **Annex G**

## **Goal Criticality**

## Annex G - CF18 Air to Ground Goal Criticality

Goal ID	Goal Label	TCR	ATCR	Results
7 1 1 1(a)	Identify TRP	7	7	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 1 1(b)	Conduct TRP Hold	5	5	This task has moderate potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 1 1(c)	Search for TRP	5	5	This task has moderate potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 1 2(a)	Establish Radar Contact with Other Mission Elements	7	8	This task has high potential to adversely affect Efficiency if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 1 2(b)	Establish Communications with Other Mission Elements	8	8	This task has high potential to adversely affect Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 1 2(c)	Establish Communications with Controlling Agency	8	8	This task has high potential to adversely affect Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 1 2(d)	Get Tactical Update and Area Brief	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 1 2(e)	Confirm Friendly Force and Adversary Disposition on LINK 16/MIDS	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 1 2(f)	Establish Visual Contact with Other Mission Elements	7	7	This task has high potential to adversely affect Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 1 2(g)	Establish AMIRS Contact with Other Mission Elements	6	7	This task has moderate potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 1 2(h)	Establish NVG Contact with Other Mission Elements	7	8	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.

Goal ID	Goal Label	TCR	ATCR	Results
7 1 1 3(c)	Conduct Formation Join-up	5	5	This task has moderate potential to adversely affect Safety, Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 1 3(d)	Confirm Formation Position on LINK 16/MIDS Tactical Displays	7	8	This task has high potential to adversely affect Efficiency if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 2 1(e)	Get Initial Target Brief	9	9	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 4 1(c)	Conduct Weapons Check-In with Controlling Agency	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 4 1(f)	Confirm Positive Radar Identification by Naval Controlling Agency	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 4 2(e)	Establish Radar Contact with Naval Ships	5	6	This task has moderate potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 4 2(f)	Deploy to CAP	5	5	This task has moderate potential to adversely affect Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 4 2(g)	Establish Visual Contact with Naval Ships	5	5	This task has moderate potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 4 2(i)	Establish AMIRS Contact with Naval Ships	3	4	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 4 2(l)	Establish NVG Contact with Naval Ships	7	8	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 5 1(b)	Establish Radar Contact with AAR	5	6	This task has moderate potential to adversely affect Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 5 1(c)	Establish Communications with AAR	5	5	This task has moderate potential to adversely affect Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.

Goal ID	Goal Label	TCR	ATCR	Results
7 1 5 1(d)	Conduct Pre AAR RV Checks	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Reliability if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 5 1(e)	Establish Visual Contact with AAR	7	7	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 5 1(f)	Establish AMIRS Contact With AAR	5	6	This task has moderate potential to adversely affect Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 5 1(g)	Establish NVG Contact with AAR	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 5 2(a)	Conduct AAR Sensors to Visual Intercept	5	5	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 5 2(b)	Adopt AAR Towline Waiting Position	5	5	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 5 2(c)	Join In Echelon Position	5	5	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 5 2(d)	Position Astern AAR Hoses	5	5	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 5 2(e)	Conduct Pre-Contact AAR Checks	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Reliability if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 1 5 2(f)	Conduct AAR Sensors to NVG Intercept	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 1 1(a)	Reduce Aircraft Emissions (EMCON Procedures)	5	5	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 1 1(b)	Ingress at Low Altitude (Sophisticated Environment)	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.

Goal ID	Goal Label	TCR	ATCR	Results
7 2 1 1(c)	Ingress at Medium/High Altitude (Permissive Environment)	7	7	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 1 1(d)	Descend to Low Altitude (Sophisticated Environment)	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 1 1(e)	Adjust to Medium/High Altitude (Permissive Environment)	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 2 1(a)	Conduct A/G Check	7	7	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 2 1(b)	Identify Initial Point Visually	7	7	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 2 1(c)	Designate/Add Offset at Initial Point	5	5	This task has moderate potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 2 1(d)	Manoeuvre to Weapons Delivery Parameters	5	5	This task has moderate potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 2 1(f)	Conduct Element Split Attacks	8	8	This task has high potential to adversely affect Safety, Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 2 1(g)	Validate Weapons Solution Display	10	10	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 2 1(h)	Deliver GP Weapons(Bombs/Rx/Cluster/Gx)	10	10	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 2 1(i)	Conduct Safe Escape Manoeuvre	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 2 1(j)	Conduct Frag Avoidance Manoeuvre	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.

Goal ID	Goal Label	TCR	ATCR	Results
7 2 2 1(k)	Conduct BDA	10	10	This task has high potential to adversely affect Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 2 1(l)	Conduct Coordinated Attacks with Other Aircraft/Elements/Sections	7	7	This task has high potential to adversely affect Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 2 1(m)	Monitor Target Area Tactical Picture on LINK 16/MIDS Displays	10	10	This task has high potential to adversely affect Efficiency if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 2 1(n)	Search for Initial Point	5	5	This task has moderate potential to adversely affect Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 2 1(o)	Search for Target	10	10	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 2 1(p)	Identify Initial Point with NVG	5	6	This task has moderate potential to adversely affect Safety, Efficiency if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 2 2(b)	Designate Target Position	7	7	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 2 2(c)	Identify Target Area with Aircraft Sensors	7	8	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 2 2(e)	Identify Target Using Map/Imagery/Onboard Sensors/LINK 16	7	8	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 2 2(g)	Deliver PGM (LGB/MAV/Adv PGM)	10	10	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task meet or exceed human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 2 2(h)	Conduct Self-Lasing LGB Delivery	10	10	This task has high potential to adversely affect Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 2 2(i)	Conduct Buddy-Lasing LGB Delivery	10	10	This task has high potential to adversely affect Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.

Goal ID	Goal Label	TCR	ATCR	Results
7 2 2 2(j)	Update Target Designation	7	8	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 3 2(b)	Egress at Low Altitude	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 3 2(c)	Egress at Medium/High Altitude	5	5	This task has moderate potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 3 2(d)	Conduct Lame Duck Procedures	5	5	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 4 1(a)	Pass IFREP	7	7	This task has high potential to adversely affect Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 4 2(a)	Conduct BD Check	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Cost if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 4 2(b)	Conduct Fence Out Check	5	5	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 5 1(a)	Establish Tactical Roles - Tactical Leads and Wingmen	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 5 1(b)	Maintain Aircraft Control and Flight Position	5	5	This task has moderate potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 5 1(c)	Execute Manoeuvre Turns	5	5	This task has moderate potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 5 2(a)	Optimize Formation for Tactical Situation	7	7	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 5 2(b)	Maintain Visual Mutual Support	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.



Goal ID	Goal Label	TCR	ATCR	Results
7 2 5 2(c)	Maintain Positional Mutual Support	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 5 2(c)	Maintain Visual Mutual Support with NVG	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 5 2(f)	Communicate with Formation Members via Discreet Frequency	7	7	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 5 2(g)	Communicate with Formation Members via Data Link	7	7	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 6 1(a)	Maintain Ground Track	5	5	This task has moderate potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 6 1(b)	Adhere to ACO	9	9	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 6 1(c)	Adjust G/S to Make Tasking Timings	7	7	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 6 1(d)	Monitor and Avoid ACO Restricted Areas	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 6 2(a)	Navigate Using Visual References	5	5	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 6 2(b)	Navigate Using Sensors Information Displayed on HSD and DDIs	5	6	This task has moderate potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 6 2(c)	Perform Navigation Systems Designations/Updates	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 6 2(d)	Employ Watch Map Ground Technique	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.

Goal ID	Goal Label	TCR	ATCR	Results
7 2 6 2(c)	Arrive at Target at Predetermined TOT	8	8	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed The demands of this task do not approach human performance limits Further analysis of this task is unlikely to result in improvement
7 2 6 2(f)	Navigate Using NVG Visual References	7	8	This task has high potential to adversely affect Safety if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 2 6 3(a)	Monitor and Avoid Weather	8	8	This task has high potential to adversely affect Safety, Efficiency if improperly performed The demands of this task do not approach human performance limits Further analysis of this task is unlikely to result in improvement
7 2 6 3(b)	Monitor and Avoid Obstacles	10	10	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed The demands of this task do not approach human performance limits Further analysis of this task is unlikely to result in improvement
7 2 6 3(c)	Monitor and Avoid Terrain	10	10	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed The demands of this task do not approach human performance limits Further analysis of this task is unlikely to result in improvement
7 2 6 3(e)	Monitor and Avoid Other Aircraft	10	10	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed The demands of this task do not approach human performance limits Further analysis of this task is unlikely to result in improvement
7 2 7 1(a)	Monitor and Maintain Assigned Radar Sensor Search Parameters	5	6	This task has moderate potential to adversely affect Mission Effectiveness/Completion, Efficiency if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 2 7 1(b)	Monitor and Maintain Radar Contact with Formation Members	7	8	This task has high potential to adversely affect Safety if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 2 7 1(c)	Monitor and Maintain Radar Contact with Lateral Mission Elements	5	6	This task has moderate potential to adversely affect Efficiency if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 2 7 1(d)	Monitor and Maintain Radar Contact with Unknowns	7	8	This task has high potential to adversely affect Efficiency if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 2 7 1(e)	Advise on Radar Acquired Unknowns	7	8	This task has high potential to adversely affect Efficiency if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 2 7 1(f)	Radar Sort Multiple Unknown Contacts	5	6	This task has moderate potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement

Goal ID	Goal Label	TCR	ATCR	Results
7 2 7 1(g)	Interrogate Unknown Radar Contacts with IFF	9	10	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 7 1(h)	Monitor Tactical Picture on LINK 16/MIDS Displays	8	9	This task has high potential to adversely affect Safety, Efficiency if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 7 2(a)	Monitor and Maintain Assigned AMIRS Search Parameters	5	6	This task has moderate potential to adversely affect Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 7 2(b)	Monitor and Maintain AMIRS Contact with Formation Members	5	6	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 7 2(c)	Monitor and Maintain AMIRS Contact with Lateral Mission Elements	3	4	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 7 2(d)	Monitor and Maintain AMIRS Contact with Unknowns	5	6	This task has moderate potential to adversely affect Safety, Efficiency if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 7 2(e)	Advise on AMIRS Acquired Unknowns	6	7	This task has moderate potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 7 2(f)	Sort Multiple Unknown Contacts with AMIRS	5	6	This task has moderate potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 7 2(g)	Interrogate Unknown AMIRS Contacts with IFF	9	10	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 7 3(a)	Maintain Visual Search Patterns	7	7	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 7 3(b)	Monitor and Maintain Visual Contact with Formation Members	5	5	This task has moderate potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 7 3(c)	Monitor and Maintain Visual Contact with Lateral Mission Elements	4	4	This task has moderate potential to adversely affect Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.

Goal ID	Goal Label	TCR	ATCR	Results
7 2 7 3(d)	Monitor and Maintain Visual Contact with Unknowns	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 7 3(e)	Advise on Visually Acquired Unknowns	7	7	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 7 3(f)	Maintain NVG Visual Search Patterns	5	6	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 7 3(g)	Monitor and Maintain NVG Contact with Formation Members	8	9	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 7 3(h)	Monitor and Maintain NVG Contact with Lateral Mission Elements	3	4	This task has slight potential to adversely affect Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 2 7 3(i)	Monitor and Maintain NVG Contact with Unknowns	8	9	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 3 2 1(a)	Copy Target Brief from FAC	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 3 2 1(b)	Read Back Mandatory Items to FAC	7	7	This task has high potential to adversely affect Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 3 2 1(c)	Enter Target Location in Aircraft database	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 3 2 1(e)	Communicate with FAC via DATA LINK 16	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 3 2 2(a)	Receive Target Description Brief from FAC	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 3 2 2(b)	Find Target Using Sensors	10	10	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.

Goal ID	Goal Label	TCR	ATCR	Results
7.3.2.2(c)	Find Target Visually	10	10	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.3.2.2(d)	Communicate Target Acquired	9	9	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.3.2.2(e)	Describe Target Area and Target to FAC	8	8	This task has high potential to adversely affect Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.3.2.2(f)	Conduct Target Run In	7	7	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.3.2.2(h)	Find Target with NVG	10	10	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.4.2.1(a)	Conduct Visual Lookout	8	8	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.4.2.1(b)	Respond to displayed RWR Threat Emission Information	7	8	This task has high potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.4.2.1(c)	Acquire Enemy Targets on LINK 16/MIDS Displays	7	8	This task has high potential to adversely affect Efficiency if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.4.2.1(d)	Find Target with Radar Search Sort and Target Contract	5	6	This task has moderate potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.4.2.1(e)	Utilize Lateral Mission Element Tactical Information	5	5	This task has moderate potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.4.2.1(f)	Find Target with AMIRS Search Sort and Target Contract	5	5	This task has moderate potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.4.2.1(g)	Conduct Visual Lookout with NVG	7	8	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.

Goal ID	Goal Label	TCR	ATCR	Results
7 4 2 2(a)	Report Target via LINK 16/MIDS Secure Communications	7	8	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 4 2 2(b)	Report Target via Have Quick II Secure Communications	7	7	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 4 2 2(c)	Utilize C2 Directive and Descriptive Commentary	6	6	This task has moderate potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 5 2 1(b)	Conduct CAP	5	5	This task has moderate potential to adversely affect Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 5 2 2(a)	Employ Radar Search Sort and Target Contract	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 5 2 2(d)	Initiate and Monitor EID of Unknowns	6	7	This task has moderate potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 5 2 2(e)	Advise on Approaching Threats	8	8	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 5 2 2(f)	Advise on Visually Acquired Threats	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 5 2 2(g)	Acquire Enemy Contacts on LINK 16/MIDS Displays	7	7	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 5 2 2(h)	VID Unknowns	9	9	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 5 2 2(i)	Employ AMIRS Search Sort and Target Contract	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 5 2 2(p)	VID Unknowns with NVG	9	10	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.

Goal ID	Goal Label	TCR	ATCR	Results
7 5 2 3(a)	Employ Tactical Deception	5	5	This task has moderate potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 5 2 3(b)	Dispense Chaff	5	6	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 5 2 3(c)	Employ Jammers	5	6	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 5 2 3(d)	Employ BVR Deception Tactics	5	5	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 5 2 4(a)	Manoeuvre/Expose the Tactical Formation	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 5 2 4(b)	Illuminate Enemy Air RWR	3	4	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 5 2 4(c)	Enhance Enemy Air Radar Acquisition	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 5 2 4(d)	Draw Enemy Air Away	7	7	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.5 2 4(e)	Negate Enemy Air Weapons Employment	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 5 2 5(a)	Deny Enemy Air Weapons Solution	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 5 2 5(b)	Negate Enemy Air Weapons Employment	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 5 2 5(c)	Employ Air-to-Air RMD	10	10	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.

Goal ID	Goal Label	TCR	ATCR	Results
7.5.2.5(d)	Employ Air-to-Air IRMD	10	10	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.5.2.5(c)	Employ AAGD	10	10	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.5.2.5(f)	Egress Engagement Safety	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.5.2.6(a)	Manoeuvre Aircraft to Intercept Enemy	6	6	This task has moderate potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.5.2.7(a)	Manoeuvre to a Weapons Engagement Zone	7	7	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.5.2.7(c)	Employ Weapons	10	10	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.5.2.7(d)	Maintain Post Attack Offensive	8	8	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.5.2.7(f)	Assess Post Merge ACM Options	5	5	This task has moderate potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.5.2.7(g)	Monitor Weapon Fly Out	5	5	This task has moderate potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.6.2.1(a)	Generate Positive Closure	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Cost if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.6.2.1(b)	Maintain Positive Closure	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Cost if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7.6.2.1(c)	Monitor and Obey AAR Lights	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.



Goal ID	Goal Label	TCR	ATCR	Results
7 6 2 2(a)	Position Pitch Ladders	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 6 2 2(b)	Align Probe	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Cost if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 6 2 3(a)	Pick Approach Reference	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 6 2 3(b)	Maintain Attitude References	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Cost if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 6 2 3(c)	Make Contact	7	7	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 6 3 1(a)	Generate Maximum Fuel Transfer	1	1	This task has slight potential to adversely affect if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 6 3 3(a)	Generate Negative Closure	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Cost if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 6 3 3(c)	Move to Astern Position	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 6 3 3(e)	Move to Outboard / Echelon Position	5	5	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 6 4 1(a)	Establish Departure Echelon Position	5	5	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 6 4 1(b)	Request Clearance to Depart	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 6 4 1(c)	Depart	5	5	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.

Goal ID	Goal Label	TCR	ATCR	Results
7 7 2 1(a)	Manoeuvre the Tactical Formation	5	5	This task has moderate potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 7 2 1(b)	Avoid Illuminating of the Enemy Air RWR	8	8	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 7 2 1(c)	Configure the Tactical Formation	8	8	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 7 2 1(d)	Establish Diverging Paths	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 7 2 1(e)	React Aggressively to Enemy Air Manoeuvre	7	7	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 7 2 1(f)	Limit Exposure Using Terrain Masking	7	7	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 7 3 6(i)	Jettison External Stores	7	8	This task has high potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 7 5 1(a)	Employ High Speed Flight	7	7	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 7 5 1(b)	Employ Low Speed Flight	7	7	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 7 5 1(c)	Avoid Threat Envelopes	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 7 5 3(b)	Employ Atmospheric Phenomena	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 7 6 1(b)	Employ Defensive Counter Measures	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.

Goal ID	Goal Label	TCR	ATCR	Results
7 7 6 3(a)	Employ Surface-to-Air RMD	10	10	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 7 6 3(b)	Employ Surface-to-Air IRMD	10	10	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 8 1 1(a)	Monitor Common Secure Voice Frequencies	7	7	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed The demands of this task do not approach human performance limits Further analysis of this task is unlikely to result in improvement
7 8 1 1(c)	Monitor Broadcast Frequencies	7	7	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed The demands of this task do not approach human performance limits Further analysis of this task is unlikely to result in improvement
7 8 3 1(b)	Monitor Secure LINK 16 Frequencies	7	7	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed The demands of this task do not approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 1 1(a)	Monitor and Manage Tank Pressurization and Vent System	5	6	This task has moderate potential to adversely affect Safety, Reliability if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 1 1(b)	Monitor and Manage Fuel Quantity Indicating System	5	6	This task has moderate potential to adversely affect Safety if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 1 1(c)	Monitor and Manage Fuel Feed Transfer	3	4	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Cost if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 1 1(d)	Monitor and Compare Fuel Flow Indications	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Reliability, Cost if improperly performed The demands of this task do not approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 1 1(e)	Monitor and Manage Feed Tank Level	5	6	This task has moderate potential to adversely affect Safety if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 1 1(f)	Monitor and Manage Fuel LO Indication	7	7	This task has high potential to adversely affect Safety if improperly performed The demands of this task do not approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 1 1(g)	Monitor and Manage Bingo Fuel	8	8	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed The demands of this task do not approach human performance limits Further analysis of this task is unlikely to result in improvement

Goal ID	Goal Label	TCR	ATCR	Results
7 9 1 1(h)	Monitor and Manage Tactical Fuel	7	7	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed The demands of this task do not approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 10 1(a)	Monitor and Manage EGI Equipment	7	8	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 10 1(b)	Monitor and Manage Navigation Aid Equipment	5	6	This task has moderate potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 11 1(a)	Monitor and Manage Radar	9	10	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 11 1(b)	Monitor and Manage Jammers	8	9	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 11 1(d)	Monitor and Manage RWR	8	9	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 11 1(e)	Monitor and Manage AN/ALE-47	8	9	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 11 1(f)	Monitor and Manage IFF Interrogator/Transponder (CIT)	7	8	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 11 1(g)	Monitor and Manage LINK 16/MIDS	8	9	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 11 1(i)	Monitor and Manage Stores Management Set	7	8	This task has high potential to adversely affect Mission Effectiveness/Completion if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 11 1(j)	Monitor and Manage Weapons	10	10	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 11 1(k)	Monitor and Manage Have Quick II	8	9	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement

Goal ID	Goal Label	TCR	ATCR	Results
7 9 11 I(l)	Monitor and Manage NVIS	8	9	This task has high potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 12 I(a)	Monitor and Manage Standard Exterior Lighting	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Cost if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 12 I(b)	Monitor and Manage Standard Interior Lighting	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Cost if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 12 I(c)	Monitor and Manage NVG Modified Exterior Lighting	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Cost if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 12 I(d)	Monitor and Manage NVG Modified Interior Lighting	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Cost if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 13 I(a)	Monitor and Manage Landing Gear System	5	6	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 13 I(b)	Monitor and Manage Brake System	5	6	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 13 I(c)	Monitor and Manage Arresting Hook System	3	4	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Cost if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 2 I(a)	Monitor Hydraulic 1 and 2 Pump Pressure Indicators and Reservoirs	5	6	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 2 I(b)	Monitor and Manage APU and Brake Accumulators	3	4	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Reliability, Cost if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 3 I(a)	Monitor and Manage Engine Performance	7	8	This task has high potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 3 I(b)	Monitor and Manage Throttle Controls	3	4	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.

Goal ID	Goal Label	TCR	ATCR	Results
7 9 3 1(c)	Monitor and Manage Engine Anti-Ice System	3	4	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 3 1(d)	Monitor and Manage Automatic Throttle Control (ATC)	1	2	This task has slight potential to adversely affect if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 3 1(e)	Monitor Inspection of Inlet Duct Doors	1	2	This task has slight potential to adversely affect if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 3 1(f)	Monitor and Manage Secondary Power Systems	5	6	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 4 1(a)	Monitor and Manage Electrical Circuit Breakers	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 4 1(b)	Monitor and Manage Generators	5	6	This task has moderate potential to adversely affect Safety, Reliability if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 4 1(c)	Monitor and Manage Transformer Rectifiers	3	4	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Cost if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 4 1(d)	Monitor and Manage Batteries	3	4	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency, Reliability, Cost if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 5 1(a)	Monitor and Manage Pilot Controls	5	6	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 5 1(b)	Monitor and Manage Primary Flight Controls	3	4	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency, Cost if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 5 1(c)	Monitor and Manage Secondary Flight Controls	3	4	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency, Cost if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 5 1(d)	Monitor and Manage FCS Status Display	3	4	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Cost if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.

Goal ID	Goal Label	TCR	ATCR	Results
7 9 5 1(e)	Monitor and Manage Departure Warning Tone	7	8	This task has high potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 5 1(f)	Monitor and Manage Spin Recovery System	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 5 1(g)	Monitor and Manage Control Augmentation System	3	4	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency, Reliability, Cost if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 5 1(h)	Monitor and Manage Flight Control Computers (FCC)	3	4	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency, Reliability, Cost if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 5 1(i)	Monitor and Manage CAS Backup Systems	3	4	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency, Reliability, Cost if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 5 1(j)	Monitor and Manage Wing Fold System	3	4	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency, Reliability if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 5 1(k)	Monitor and Manage Automatic Flight Control System	3	4	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency, Reliability, Cost if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 6 1(a)	Monitor and Manage Warning/Caution/Advisory Lights and Displays	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 6 1(b)	Monitor and Manage Master Caution Light and Tone	7	7	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 6 1(c)	Monitor Voice Alert System	7	7	This task has high potential to adversely affect Safety if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 6 1(d)	Monitor and Manage GPWS	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 6 1(e)	Monitor and Manage Fire Detection/Extinguishing System	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.

Goal ID	Goal Label	TCR	ATCR	Results
7 9 6 1(f)	Monitor and Manage Canopy System	5	6	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 6 1(g)	Monitor and Manage Ejection Seat System	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 6 1(h)	Monitor and Manage Life Support Systems	10	10	This task has high potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 7 1(a)	Monitor and Manage Bleed Air Systems	5	6	This task has moderate potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 7 1(b)	Monitor and Manage Windshield Anti-Ice and Rain Removal System	3	4	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Efficiency if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 7 1(c)	Monitor and Manage Avionics Cooling and Pressurization	5	6	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 7 1(d)	Monitor and Manage Cockpit Air-Conditioning and Pressurization	5	6	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 8 1(a)	Monitor and Manage Pitot Static System	5	6	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 8 1(b)	Monitor and Manage Standby Instruments	3	4	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 8 1(c)	Monitor and Manage Radar Altimeter	5	6	This task has moderate potential to adversely affect Safety if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 8 1(d)	Monitor and Manage AOA Indexer	1	2	This task has slight potential to adversely affect if improperly performed. The demands of this task approach human performance limits. Further analysis of this task is unlikely to result in improvement.
7 9 8 1(e)	Monitor and Manage Clock	3	3	This task has slight potential to adversely affect Mission Effectiveness/Completion, Reliability if improperly performed. The demands of this task do not approach human performance limits. Further analysis of this task is unlikely to result in improvement.



Goal ID	Goal Label	TCR	ATCR	Results
7 9 9 1(a)	Monitor and Manage Mission Computer System	5	6	This task has moderate potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 9 1(b)	Monitor and Manage Cockpit Controls and Displays	5	5	This task has moderate potential to adversely affect Safety, Mission Effectiveness/Completion if improperly performed The demands of this task do not approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 9 1(c)	Monitor and Manage UFC	3	3	This task has slight potential to adversely affect Safety, Mission Effectiveness/Completion, Cost if improperly performed The demands of this task do not approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 9 7(d)	Monitor and Manage CVRS	3	4	This task has slight potential to adversely affect Mission Effectiveness/Completion, Cost if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement
7 9 9 7(e)	Monitor and Manage Digital Displays VRS	3	4	This task has slight potential to adversely affect Mission Effectiveness/Completion, Cost if improperly performed The demands of this task approach human performance limits Further analysis of this task is unlikely to result in improvement

# **Annex H**

## **Operational Sequence Diagrams**

*Chart held at DRDKIM*

*If you would like to view chart, please contact DRDKIM 2-2*

# **Annex I**

## **PCT Goal Analysis Results**

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 2 1(b)	Goal:	that the Initial Point is identified Visually	Goal ID:	7 2 2 1(b)	Source Goal:	7 2 2 1(b)
Description:							
Look out and identify large features that help you to identify smaller features that make IP unique Identify IP visually as you over fly it Compare the visual image with the pre-studied Map of the IP or with the memorized image of the features identifying the IP							
Auditory Category:	0	None	Operator: Pilot				
External Cue:	Not Applicable		Priority: 5				
Cognitive Category:	4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)	Interruptable: Yes				
Initiating Conditions:	the search for IP has been completed		Resumable: No				
Initiating Actions:	Identify features that will lead to IP identification		Feeds Back to Higher Level Goal				
Ending Conditions:	The Initial Point is identified Visually		No				
Ending Actions:	Stop attending to goal		Declarative:				
Pattern recognition, key features to identify ground patterns visually							
<u>KNOWLEDGE</u>							
Situational:							
Specific Initial Point features (e g terrain, large features surrounding IP, smaller unique IP features, weather, etc ) Aircraft altitude and speed							

OUTPUT/BEHAVIOUR

Voice: 0 None

Psychomotor: 1 1 Simple

Memory: 1 Commit to memory (LTM and STM)

External Influenced Variables None

Output Interface: None

INPUT/SENSATION

Vision: 1 2 Pattern, spatial relationship, tracking, graphic displays

Audition: 0 None

Kinesthetic: 0 None

Memory: 2 3 Spatially coded

Internal Influenced Variables Belief that the Initial Point is Identified

Input Interface: Surrounding Ground, Initial Point Map

COGNITIVE/PERCEPTUAL PROCESS

Voice: 0 None

Psychomotor: 1 Automatised, highly learned

Memory: 5 Memorization

COGNITIVE/PERCEPTUAL PROCESS

Vision: 4 Spatial encoding, visual pattern recognition

Audition: 0 None

Kinesthetic: 0 None

Memory: 3 Spatial decoding

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 2 1(c)	Goal:	that the target steering information is available and displayed	Goal ID:	7 2 2 1(c)	Source Goal:	7 2 2 1(c)
<b>Description:</b> Over fly designation First, ensure you are in NAV or A/G Master mode, then assign the TDC to the HSD Anticipate over fly of IP using external visual references Depress the TDC when you are accurately positioned over the point you want to designate If the wypt you have selected at the time happens to be an OAP (has offset data entered) then the MC assumes that you are overhead the OAP and automatically adds the offset information to the designation This only takes place for an over fly designation Confirm that the Target Wypt, distance and heading are displayed in the HUD and that they are accurate Sensor designation First NAV designate the IP (or Offset aim point) With the TDC assigned to the desired display (Radar or the AMIRS), the designation is then adjusted by moving the TD diamond or the NAV stabilized							
Auditory Category:	0	None					
External Cue:	Not Applicable						
Cognitive Category:	3	Verbal encoding, decoding, speech production, listening					
Initiating Conditions: Arriving over the IP							
Initiating Actions: Designation of the Initial Point							
Ending Conditions: Target steering information is available and displayed							
Ending Actions: Stop attending to goal							
<b>KNOWLEDGE</b>							
Declarative:			Equipment operating procedures Standard Operating procedures Designation procedures				
Situational:			Mission requirements and objectives Specifics of the tactical situation (c.g. threat/friendly forces, weather, terrain, etc.) Details of on-going or planned activities				

OUTPUT/BEHAVIOUR

Voice: 0 None

Psychomotor: 1 1 Simple

Memory: 1 Commit to memory (LTM and STM)

External Influenced Variables Target steering information activated and displayed

Output Interface: HUD and HSD

COGNITIVE/PERCEPTUAL PROCESS

Voice: 0 None

Psychomotor: 1 Automatised, highly learned

Memory: 5 Memorization

INPUT/SENSATION

Vision: 1 1 Text, Dial Reading

Audition: 0 None

Kinesthetic: 0 None

Memory: 2 3 Spatially coded

Internal Influenced Variables Belief (or visual comparison with Map Information) that target information displays accurate steering/distance to the target

Input Interface: HUD and HSD Information on MAP

COGNITIVE/PERCEPTUAL PROCESS

Vision: 3 Verbal encoding

Audition: 0 None

Kinesthetic: 0 None

Memory: 3 Spatial decoding

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 2 1(d)	Goal:	that the aircraft is in the desired position to release weapons	Goal ID:	7 2 2 1(d)	Source Goal:	7 2 2 1(d)
<b>Description:</b> Conduct attack type desired to get to optimal delivery parameters Level Attack, Curvilinear Attack, Pop Up Attack, Curvi Pop Attack, and Loft/Toss The pull up is generally done by applying 3 G, smoothly and rapidly raising the nose to the desired climb angle Adjust Power to achieve and maintain the desired IAS/TAS Anticipate the turn-in point and roll-in to the desired Dive angle by placing the Lift vector on the AOD (AIM Off Distance) Three G is normally used through the turn. Anticipate Velocity vector approaching the AOD, and conduct an unloaded roll to wings level at the desired dive angle Adjust Power to achieve and maintain the desired IAS/TAS Adjust dive angle to the desired delivery angle and							
Auditory Category:	0	None					
External Cue:	Not Applicable						
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops					
Initiating Conditions:	Designated distance/time from the target						
Initiating Actions:	Manoeuvre aircraft towards a weapons release solution						
Ending Conditions:	Aircraft has achieved Weapons Delivery Parameters						
Ending Actions:	Maintain stable platform for weapons release						
<b><u>KNOWLEDGE</u></b>							
			Declarative:	Aircraft operating procedures. Tactics Standard Operating procedures Applicable orders, regulations and plans			
			Situational:	Mission requirements and objectives Specifics of the tactical situation (e.g. threat/friendly forces, weather, terrain, etc.) Details of on-going or planned activities			

OUTPUT/BEHAVIOUR

Voice:	0	None
Psychomotor:	1 2	Difficult but familiar
Memory:	1	Commit to memory (LTM and STM)
External Influenced Variables	Aircraft position, altitude, attitude, heading, speed and g	
Output Interface:	Aircraft controls and throttles, HUD	

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None
Psychomotor:	4	Spatial encoding
Memory:	5	Memorization

INPUT/SENSATION

Vision:	2	Peripheral
Audition:	0	None
Kinesthetic:	1 1	Simple stimulus
Memory:	2 5	Complex operation
Internal Influenced Variables	Belief that the aircraft displayed parameters have achieved desired Weapons release parameters	
Input Interface:	HUD, Relative position to surrounding ground/terrain	

COGNITIVE/PERCEPTUAL PROCESS

Vision:	1	Automatised, highly learned perception
Audition:	0	None
Kinesthetic:	1	Automatised, highly learned perception
Memory:	5	Recall

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 2 1(c)	Goal:	that the Initial Point is identified Visually	Goal ID:	7 2 2 1(c)	Source Goal:	7 2 2 1(b)
<b>Description:</b> Look out and identify large features that help you to identify smaller features that make IP unique Identify IP visually as you over fly it Compare the visual image with the pre-studied Map of the IP or with the memorized image of the features identifying the IP							
Auditory Category:	0	None	Operator: Pilot				
External Cue:	Not Applicable		Priority: 5				
Cognitive Category:	4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)	Allowable Delay (K): 1 5				
Initiating Conditions:			the search for IP has been completed.				
Initiating Actions:			Identify features that will lead to IP identification				
Ending Conditions:			The Initial Point is identified Visually.				
Ending Actions:			Stop attending to goal.				
Declarative:			Pattern recognition, key features to identify ground patterns visually				
Situational:			Specific Initial Point features (e.g. terrain, large features surrounding IP, smaller unique IP features, weather, etc.) Aircraft altitude and speed				
KNOWLEDGE							

OUTPUT/BEHAVIOUR		COGNITIVE/PERCEPTUAL PROCESS	
Voice:	0 None	Voice:	0 None
Psychomotor:	1 1 Simple	Psychomotor:	1 Automatised, highly learned
Memory:	1 Commit to memory (LTM and STM)	Memory:	5 Memorization
External Influenced Variables	None	COGNITIVE/PERCEPTUAL PROCESS	
Output Interface:	None	Vision:	4 Spatial encoding, visual pattern recognition
INPUT/SENSATION		Audition:	0 None
Vision:	1 2 Pattern, spatial relationship, tracking, graphic displays	Kinesthetic:	0 None
Audition:	0 None	Memory:	3 Spatial decoding
Kinesthetic:	0 None	Internal Influenced Variables	
Memory:	2.3 Spatially coded	Belief that the Initial Point is Identified	
Input Interface:		Surrounding Ground, Initial Point Map	



Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 2 1(f)	Goal:	that the aircraft is positioned at the required time spacing over the target to avoid FRAG	Goal ID:	7 2 2 1(f)	Source Goal:	7 2 2 1(f)
Description:	While flying in tactical formation, at the pre-planned range from the target, wingmen perform an energy sustaining 90 degrees turn into lead Roll out on perpendicular track and maintain heading for the required time (5-20sec) At the appropriate time or on a visual ground reference, wingmen turn back towards the target and conduct their own attack, having achieved the required time separation from their leads Wingmen then cross check that they have the required separation as lead is over flying the target and adjust the run-in accordingly						
Auditory Category:	1	Tone or Simple Auditory Sign		Operator:	Pilot	Completion Time:	70
External Cue:	No			Priority:	4	Allowable Delay (K):	1 3
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops		Interruptable:	No	Sheddable:	No
Initiating Conditions:	Designated distance from the target.			Resumable:	Not Applicable	Shed If Late:	Not Applicable
Initiating Actions:	Manoeuvre aircraft to conduct element split			Feeds Back to Higher Level Goal	No		
Ending Conditions:	Aircraft has the required timing spacing to conduct target attack						
Ending Actions:	Maintain timing spacing						
				<b>KNOWLEDGE</b>			
				<b>Declarative:</b>			
				Aircraft operating procedures Tactics Standard Operating procedures			
				<b>Situational:</b>			
				Mission requirements and objectives Specifics of the tactical situation (c g threat/friendly forces, weather, terrain, etc ) Details of on-going or planned activities Type of weapons delivered			

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None	Voice:	0	None
Psychomotor:	1 2	Difficult but familiar	Psychomotor:	4	Spatial encoding
Memory:	1	Commit to memory (LTM and STM)	Memory:	5	Memorization
External Influenced Variables	Aircraft position, altitude, heading, speed Other formation Aircraft position and distance relative to own				
Output Interface:	Aircraft controls and throttles, HUD, Link 16/MIDS display				
<b>INPUT/SENSATION</b>			<b>COGNITIVE/PERCEPTUAL PROCESS</b>		
Vision:	1 2	Pattern, spatial relationship, tracking, graphic displays	Vision:	4	Spatial encoding, visual pattern recognition
Audition:	1	Tone or simple auditory signal	Audition:	1	Automatised, highly learned perception
Kinesthetic:	0	None	Kinesthetic:	0	None
Memory:	2 4	Semantically coded	Memory:	3	Verbal decoding
Internal Influenced Variables	Belief that the aircraft has achieved the desired timing spacing to conduct the attack				
Input Interface:	HUD, Link 16/MIDS display Other Formation Aircraft position				

## Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 2 1(g)	Goal:	that the weapons solution is validated for weapons release	Goal ID:	7 2 2 1(g)	Source Goal:	7 2 2 1(g)
<b>Description:</b> Confirm visually on the HUD that all required delivery parameters have been attained for release    Ensure that the proper weapon is selected and that the TDC is assigned to the appropriate display for delivery    Confirm visually on the HUD that the Master ARM is in the ARM position    Visually confirm that the desired release symbology is displayed and is valid for release    Confirm that the displayed aim point is on the DMP1 (Desired Mean Point of Impact)							
<b>Auditory Category:</b> 0    None							
<b>External Cue:</b> Not Applicable							
<b>Cognitive Category:</b> 5    Memorization/recall, calculation, estimation, deduction, reasoning, high level ops							
<b>Initiating Conditions:</b> Aircraft has achieved weapons release parameters and point of release is approaching							
<b>Initiating Actions:</b> Visually confirm weapon solution							
<b>Ending Conditions:</b> Weapons solution has been validated							
<b>Ending Actions:</b> Monitor weapons solution							
<b>Operator:</b> Pilot							
<b>Priority:</b> 2							
<b>Allowable Delay (K):</b> 1 2 <b>Difficulty (D)</b>							
<b>Interruptable:</b> No							
<b>Sheddable:</b> No							
<b>Resumable:</b> Not Applicable							
<b>Shed If Late:</b> Not Applicable							
<b>Feeds Back to Higher Level Goal</b> No							
<b><u>KNOWLEDGE</u></b>							
<b>Declarative:</b> Aircraft operating procedures    Tactics    Standard Operating procedures    Weapons operating procedures							
<b>Situational:</b> Mission requirements and objectives.    Specifics of the tactical situation (e g threat/friendly forces, weather, terrain, etc )    Type of weapons delivered							

## **OUTPUT/BEHAVIOUR**

**Voice:** 0 Nonc

**Psychomotor:**  
0 None

**Memory:**

## External Influenced Variables

### Output Interface:

## INPUT/SENSATION

**Vision:**      11 Text, Dial Reading

**Audition:**

0 None

**Kinesthetic:**

**Memory:** 24 Semantically coded

### Internal Influenced Variables

**Input Interface:** HUD

## COGNITIVE/PERCEPTUAL PROCESS

**Voice:** 0 None

Psychomotor: 0 None

## Memory: 5 Memorization

## COGNITIVE/PERCEPTUAL PROCESS

**Vision:** 3 Verbal encoding

**Audition:** 0 None

Kinesthetic: 0 None

**Memory:** 3 Verbal decoding

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 2 1(h)	Goal:	that GP Weapons are delivered	Goal ID:	7 2 2 1(h)	Source Goal:	7 2 2 1(h)
<b>Description:</b> Depress and hold the weapons release button (Pickle button) on the stick Confirm that the weapons are being released Once all weapons have been released, release Pickle button Confirm weapons release on the SMS page on the DDI							
<b>Auditory Category:</b>		0	None	<b>Operator:</b>	Pilot	<b>Completion Time:</b>	3
<b>External Cue:</b>		Not Applicable			<b>Priority:</b>	2	<b>Allowable Delay (K):</b> 1 2 <b>Difficulty (D)</b>
<b>Cognitive Category:</b>		1	Automatized, highly learned (easy to do for a trained person)	<b>Interruptable:</b>	No	<b>Sheddable:</b>	No
<b>Initiating Conditions:</b>		Weapons solution validated and aircraft is at release altitude and or range			<b>Resumable:</b>	Not Applicable	<b>Shed If Late:</b> Not Applicable
<b>Initiating Actions:</b>		Monitor displayed release symbology			<b>Feeds Back to Higher Level Goal</b> No		
<b>Ending Conditions:</b>		All weapons have been released			<b>KNOWLEDGE</b>		
<b>Ending Actions:</b>		Stop attending to goal			<b>Declarative:</b> Aircraft operating procedures    Tactics    Standard Operating procedures    Weapons operating procedures		
<b>Initiating Actions:</b>		Monitor displayed release symbology			<b>Situational:</b> Type of weapons released, weather conditions, visibility, winds, sun, terrain, target type		

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0	None	<b>Voice:</b>	0	None
<b>Psychomotor:</b>	1	Simple	<b>Psychomotor:</b>	1	Automatised, highly learned
<b>Memory:</b>	1	Commit to memory (LTM and STM)	<b>Memory:</b>	5	Memorization
<b>External Influenced Variables</b> Weapons releasing from aircraft , Pickle button depression, Weapons release symbology					
<b>Output Interface:</b> HUD, DDI, HOTAS, Pickle button					

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

<b>Vision:</b>	1 2	Pattern, spatial relationship, tracking, graphic displays	<b>Vision:</b>	4	Spatial encoding, visual pattern recognition
<b>Audition:</b>	0	None	<b>Audition:</b>	0	None
<b>Kinesthetic:</b>	1 1	Simple stimulus	<b>Kinesthetic:</b>	1	Automatised, highly learned perception
<b>Memory:</b>	2 4	Semantically coded	<b>Memory:</b>	3	Verbal decoding
<b>Internal Influenced Variables</b> Belief that the weapons have been delivered and that the symbology displays that fact					
<b>Input Interface:</b> HUD, DDI, Aircraft movement at weapons release,					

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 2 1(i)	Goal:	that the Aircraft is recovered safely and misses the ground by the desired altitude	Goal ID:	7 2 2 1(i)	Source Goal:	7 2 2 1(i)
Description:	At the appropriate recovery altitude or when pull-up cue / breakaway X is displayed in the HUD, the pilot must achieve a 4-G pull-up manoeuvre within 1 5 seconds and hold the 4-G throughout the pullout until desired climb angle is achieved to meet the clearance criteria. Adjust throttles to achieved and maintain desired recovery airspeed. Cross check Baro or Radar altitude during recovery to ensure minimum altitude is not broken. Increase G if required						
Auditory Category:	0	None	Operator:	Pilot	Completion Time:	15	
External Cue:	Not Applicable		Priority:	1	Allowable Delay (K):	Difficulty (D)	
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops	Interruptable:	No	Sheddable:	No	
Initiating Conditions:	Weapons release is completed and/or aircraft at minimum recovery altitude, whichever comes first		Resumable:	Not Applicable	Shed If Late:	Not Applicable	
Initiating Actions:	Safe escape dive recovery initiated by pull up manoeuvre		Feeds Back to Higher Level Goal	No	<u>KNOWLEDGE</u>		
Ending Conditions:	Aircraft is at a safe altitude from the ground in the desired climbing attitude		Declarative:				
Ending Actions:	Stop attending to goal		Aircraft operating procedures Tactics Standard Operating procedures Recovery/pull up symbology				
			Situational:				
			Minimum recovery altitude, terrain, slope, weather, visibility				

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None	Voice:	0	None
Psychomotor:	1 2	Difficult but familiar	Psychomotor:	4	Spatial encoding
Memory:	1	Commit to memory (LTM and STM)	Memory:	5	Memorization
External Influenced Variables	Aircraft position, altitude, attitude, heading, speed and g				
Output Interface:	Aircraft controls and throttles HUD, Safe escape auditory signals				
<u>INPUT/SENSATION</u>			<u>COGNITIVE/PERCEPTUAL PROCESS</u>		
Vision:	1 2	Pattern, spatial relationship, tracking, graphic displays	Vision:	4	Spatial encoding, visual pattern recognition
Audition:	5	Speech input (attended to, salient to the primary task)	Audition:	5	Verbal decoding, speech recognition
Kinesthetic:	1 1	Simple stimulus	Kinesthetic:	1	Automatised, highly learned perception
Memory:	2 4	Semantically coded	Memory:	3	Verbal decoding
Internal Influenced Variables	Belief that the desired safe escape attitude and the altitude above ground are achieved				
Input Interface:	HUD, Relation to the ground, Safe escape auditory signals				

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 2 1(g)	Goal:	that the aircraft avoids the weapon frag pattern	Goal ID:	7 2 2 1(g)	Source Goal:	7 2 2 1(g)
<b>Description:</b>							
Conduct turning safe escape manoeuvre, climbing safe escape manoeuvre, level straight through safe escape manoeuvre or recovery above weapon frag altitude							
At the appropriate frag avoidance recovery altitude or distance, the pilot must achieve the desired G pull-up manoeuvre within 1.5 seconds and hold the G throughout the pullout until desired climb angle or heading away from target is achieved to meet the Frag clearance criteria. Adjust throttles to achieved and maintain desired airspeed. Cross check Baro, Radar altitude and range to target during avoidance manoeuvre to ensure minimum altitude or distance is not broken. Increase G if required.							
<b>Auditory Category:</b> 0 None							
<b>External Cue:</b> Not Applicable							
<b>Cognitive Category:</b> 1 Automatized, highly learned (easy to do for a trained person)							
<b>Initiating Conditions:</b> Weapons release is completed and/or aircraft at minimum frag recovery altitude or range, whichever comes first.							
<b>Initiating Actions:</b> Manoeuvre aircraft to conduct frag avoidance							
<b>Ending Conditions:</b> Aircraft is at a safe distance from the weapons frag pattern							
<b>Ending Actions:</b> Stop attending to goal							
<b>Declarative:</b> Aircraft operating procedures Tactics Standard Operating procedures Frag avoidance manoeuvres procedures.							
<b>Situational:</b> Type of weapon released, weather conditions, visibility, winds, sun, terrain, slope, target type Minimum frag avoidance altitude and or range							

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0 None	Voice:	0 None
Psychomotor:	1 2 Difficult but familiar	Psychomotor:	4 Spatial encoding
Memory:	1 Commit to memory (LTM and STM)	Memory:	5 Memorization

External Influenced Variables Aircraft position, altitude, attitude, heading, speed and g Weapons frag pattern

Output Interface: HUD

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

Vision:	1 2 Pattern, spatial relationship, tracking, graphic displays	Vision:	4 Spatial encoding, visual pattern recognition
Audition:	0 None	Audition:	0 None
Kinesthetic:	1 1 Simple stimulus	Kinesthetic:	1 Automatised, highly learned perception
Memory:	2 4 Semantically coded	Memory:	3 Verbal decoding

Internal Influenced Variables Belief that the aircraft is at a safe distance from the weapons frag pattern

Input Interface: HUD

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 2 1(k)	Goal:	that BDA is conducted	Goal ID:	7 2 2 1(k)	Source Goal:	7 2 2 1(k)
<b>Description:</b>							
After ensuring that Aircraft is safely recovered from delivery, if desired the target BDA can be conducted by assessing Bomb impact point and damage resulting from hit Visually assess the AMIRS display							
<b>Auditory Category:</b>				<b>Operator:</b>	Pilot	<b>Completion Time:</b>	5
<b>External Cue:</b>				<b>Priority:</b>	8	<b>Allowable Delay (K):</b>	<b>Difficulty (D)</b>
<b>Cognitive Category:</b>				<b>Interruptable:</b>	Yes	<b>Sheddable:</b>	Yes
<b>Initiating Conditions:</b>				<b>Resumable:</b>	No	<b>Shed If Late:</b>	No
				<b>Feeds Back to Higher Level Goal</b>	No		
<b>KNOWLEDGE</b>							
				<b>Declarative:</b>			
				Assessment of target battle damage on IR display Weapons effects			
<b>Situational:</b>							
Target type and size, Weapons type, Weapons impact angle, weather, distance, AMIRS magnification							
<b>Initiating Actions:</b>							
Look at DDI							
<b>Ending Conditions:</b>							
Target BDA is complete							
<b>Ending Actions:</b>							
Memorize target BDA							

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0	None	<b>Voice:</b>	0	None
<b>Psychomotor:</b>	0	None	<b>Psychomotor:</b>	0	None
<b>Memory:</b>	1	Commit to memory (LTM and STM)	<b>Memory:</b>	5	Memorization
<b>External Influenced Variables</b>					
None					
<b>Output Interface:</b>					
DDI, AMIRS display					
<b>INPUT/SENSATION</b>					
<b>Vision:</b>	1	2	Pattern, spatial relationship, tracking, graphic displays	<b>Vision:</b>	4
<b>Audition:</b>	0	None		<b>Audition:</b>	0
<b>Kinesthetic:</b>	0	None		<b>Kinesthetic:</b>	0
<b>Memory:</b>	2	3	Spatially coded	<b>Memory:</b>	3
<b>Internal Influenced Variables</b>					
Belief that the target battle damage has been assessed					
<b>Input Interface:</b>					
DDI, AMIRS display					

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 2 1(n)	Goal:	that the area surrounding the IP and the IP are found visually	Goal ID:	7 2 2 1(n)	Source Goal:	7 2 2 1(n)
<b>Description:</b>							
Anticipate what the IP and surrounding area look like by reviewing the attack map visually or mentally When reviewing the map, recognize how your run-in ground track will bring you into and over the IP Look out and search for large features that help you to identify smaller features that lead your eyes to the IP							
Auditory Category:		0	None	Operator:	Pilot	Completion Time:	10
External Cue:		4	Not Applicable	Priority:	4	Allowable Delay (K):	1 65
Cognitive Category:		4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)	Interruptable:	Yes	Difficulty (D)	
Initiating Conditions:		Specific range from the IP, within line of sight		Sheddable:	No		
Initiating Actions:		Conduct visual search pattern		Resumable:	No	Shed If Late:	Not Applicable
Ending Conditions:		IP has been located.		Feeds Back to Higher Level Goal	No		
Ending Actions:		Monitor IP position for Identification and designation		<b>KNOWLEDGE</b>			
				<b>Declarative:</b>			
				Visual search pattern technique Pattern recognition, keys features to find ground patterns visually			
				<b>Situational:</b>			
				Specific Initial Point surrounding features (c g terrain, large features surrounding IP, smaller unique IP features, weather, etc )			

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None	Voice:	0	None
Psychomotor:	1 1	Simple	Psychomotor:	1	Automatised, highly learned
Memory:	1	Commit to memory (LTM and STM)	Memory:	5	Memorization
External Influenced Variables					
None					
Output Interface:					
None					

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

Vision:	1 2	Pattern, spatial relationship, tracking, graphic displays	Vision:	4	Spatial encoding, visual pattern recognition
Audition:	0	None	Audition:	0	None
Kinesthetic:	0	None	Kinesthetic:	0	None
Memory:	2 3	Spatially coded	Memory:	3	Spatial decoding
Internal Influenced Variables					
Belief that IP has been located					
Input Interface:					
Surrounding Ground, Initial Point Map					

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 2 1(o)	Goal:	that the area surrounding the target and the target are found visually	Goal ID:	7 2 2 1(o)	Source Goal:	7 2 2 1(o)
<b>Description:</b>							
Anticipate what the target surrounding area look like by reviewing the target photos, Maps or data linked imagery visually or mentally When reviewing the target, recognize how your run-in ground track will bring you into and over the target							
Look out and search for large features that help you to identify smaller features that lead your eyes to the Target							
Find DMPI							
<b>Auditory Category:</b> 0 None							
<b>External Cue:</b> Not Applicable							
<b>Cognitive Category:</b> 4 Spatial encoding, decoding, pattern recognition (reading maps, giving directions)							
<b>Initiating Conditions:</b> Specific range from the target, within line of sight, during pull up manoeuvre .							
<b>Initiating Actions:</b> Conduct visual search pattern							
<b>Ending Conditions:</b> Target has been located							
<b>Ending Actions:</b> Monitor Target position for Identification.							
<b>Declarative:</b>							
Visual search pattern technique Pattern recognition, key features to find ground patterns visually							
<b>Situational:</b>							
Specific Target surrounding features (e.g. terrain, large features surrounding Target, smaller unique target features, weather, etc.)							
<b>KNOWLEDGE</b>							
<b>Operator:</b> Pilot							
<b>Priority:</b> 3							
<b>Allowable Delay (K):</b>							
<b>Difficulty (D):</b>							
<b>Sheddable:</b> No							
<b>Shed If Late:</b> Not Applicable							
<b>Feeds Back to Higher Level Goal:</b> No							

OUTPUT/BEHAVIOUR

<b>Voice:</b>	0 None	<b>Voice:</b>	0 None
<b>Psychomotor:</b>	1 1 Simple	<b>Psychomotor:</b>	1 Automatised, highly learned
<b>Memory:</b>	1 Commit to memory (LTM and STM)	<b>Memory:</b>	5 Memorization
<b>External Influenced Variables</b> None			
<b>Output Interface:</b> None			

INPUT/SENSATION

<b>Vision:</b>	1 2 Pattern, spatial relationship, tracking, graphic displays	<b>Vision:</b>	4 Spatial encoding, visual pattern recognition
<b>Audition:</b>	0 None	<b>Audition:</b>	0 None
<b>Kinesthetic:</b>	0 None	<b>Kinesthetic:</b>	0 None
<b>Memory:</b>	2 3 Spatially coded	<b>Memory:</b>	3 Spatial decoding
<b>Internal Influenced Variables</b> Belief that Target has been located			
<b>Input Interface:</b> Surrounding Ground and target features			



Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 2 2(b)	Goal:	that the target is designated and that the steering information is available and displayed	Goal ID:	7 2 2 2(b)	Source Goal:	7 2 2 2(b)
<b>Description:</b> First NAV designate the Target position (or Offset aim point) With the TDC assigned to the desired display (Radar or the AMIRS), the designation is then adjusted by moving the TD diamond or the NAV stabilized cursor designation When satisfied that the designation is accurately on the Target (or Offset point) add O/S if required (Pre-programmed) by depressing the appropriate push button on the HSD Confirm that the Target Wyppt, distance and heading are displayed in the HUD and that they are accurate							
<b>Auditory Category:</b>		0	None	<b>Operator:</b>		Pilot	<b>Completion Time:</b> 25
<b>External Cue:</b>		Not Applicable			<b>Priority:</b>	4	<b>Allowable Delay (K):</b> 1 6
<b>Cognitive Category:</b>		1	Automatized, highly learned (easy to do for a trained person)	<b>Interruptable:</b>		Yes	<b>Sheddable:</b> No
<b>Initiating Conditions:</b>		Desired Range from the target			<b>Resumable:</b>		No
<b>Initiating Actions:</b>		Nav designate the target			<b>Feeds Back to Higher Level Goal</b> No		
<b>Ending Conditions:</b>		Target designation symbology is on the desired location for target area identification			<b>KNOWLEDGE</b>		
<b>Ending Actions:</b>		Keep target designation on the desired aim point			<b>Declarative:</b> Aircraft operating procedures Tactics Standard Operating procedures Designation procedures Sensor displays and symbology interpretation		
					<b>Situational:</b> General target Area features Range and distance from target		

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None
Psychomotor:	1	Automatised, highly learned
Memory:	5	Memorization

External Influenced Variables Target designation symbology

Output Interface: DDI,HUD

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

Vision:	1 2	Pattern, spatial relationship, tracking, graphic displays
Audition:	0	None
Kinesthetic:	0	None
Memory:	2 3	Spatially coded
<b>Internal Influenced Variables</b> Belief that the target designation symbology displayed is on the desired location		
<b>Input Interface:</b> Sensor display on DDI		

Vision:	4	Spatial encoding, visual pattern recognition
Audition:	0	None
Kinesthetic:	0	None
Memory:	3	Spatial decoding

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 2 2(c)	Goal:	that the target area is identified with Aircraft Sensors	Goal ID:	7 2 2 2(c)	Source Goal:	7 2 2 2(c)
<b>Description:</b>							
Anticipate what the target surrounding area look like by reviewing the target photos, Maps or data linked imagery visually or mentally When reviewing the target, recognize how your run-in ground track will bring you into and over the target Visually look at the displayed target Area picture and search for large features that help you to identify smaller features Identify target Area							
<b>Auditory Category:</b>		0	None	<b>Operator:</b>		Pilot	<b>Completion Time:</b> 10
<b>External Cue:</b>		Not Applicable		<b>Priority:</b>		4	<b>Allowable Delay (K):</b> 1 5 <b>Difficulty (D)</b>
<b>Cognitive Category:</b>		4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)	<b>Interruptable:</b>		Yes	<b>Sheddable:</b> No
<b>Initiating Conditions:</b>		Target has been designated, at the calculated range where magnification provides enough details for area ID.					
<b>Initiating Actions:</b>		Look at target area on DDI					
<b>Ending Conditions:</b>		Target Area has been identified					
<b>Ending Actions:</b>		Monitor displayed target Area for target Identification					
<b>Auditory Category:</b>		0	None	<b>Resumable:</b>		No	<b>Shed If Late:</b> Not Applicable
<b>External Cue:</b>		Not Applicable		<b>Feeds Back to Higher Level Goal</b>		No	
<b>Cognitive Category:</b>		4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)	<b>Declarative:</b>		Aircraft operating procedures Tactics Standard Operating procedures Sensor displays and symbology interpretation	
<b>Initiating Conditions:</b>		Target has been designated, at the calculated range where magnification provides enough details for area ID.					
<b>Initiating Actions:</b>		Look at target area on DDI					
<b>Ending Conditions:</b>		Target Area has been identified					
<b>Ending Actions:</b>		Monitor displayed target Area for target Identification					
<b>Situational:</b>		Specific target area features (e g terrain, large features surrounding target, weather, etc )					

OUTPUT/BEHAVIOUR

**Voice:** 0 None

**Psychomotor:** 0 None

**Memory:** 1 Commit to memory (LTM and STM)

**External Influenced Variables** None

**Output Interface:** DDI

COGNITIVE/PERCEPTUAL PROCESS

**Voice:** 0 None

**Psychomotor:** 0 None

**Memory:** 5 Memorization

INPUT/SENSATION

**Vision:** 1 2 Pattern, spatial relationship, tracking, graphic displays

**Audition:** 0 None

**Kinesthetic:** 0 None

**Memory:** 2 3 Spatially coded

**Internal Influenced Variables** Belief that the Area displayed on the DDI corresponds to the desired target surroundings

**Input Interface:** DDI

COGNITIVE/PERCEPTUAL PROCESS

**Vision:** 4 Spatial encoding, visual pattern recognition

**Audition:** 0 None

**Kinesthetic:** 0 None

**Memory:** 3 Spatial decoding

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 2 2(c)	Goal:	that the target is identified	Goal ID:	7 2 2 2(e)	Source Goal:	7 2 2 2(e)
<b>Description:</b> Anticipate what the target looks like by reviewing the target photos, Maps or data linked imagery visually or mentally When reviewing the target, recognize what the target image should look like on the displays. Adjust Sensors information displayed to optimize target resolution and recognition features Visually look at the target picture displayed on the Sensors tactical displays and search for large features that help you to identify smaller features Identify target							
Auditory Category:	0	None					
External Cue:	Not Applicable						
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops					
Initiating Conditions:	Target area has been identified on the Sensor display, at the calculated range where magnification provides enough details for target ID						
Initiating Actions:	Look at the target image on the DDI						
Ending Conditions:	Target is positively Identified						
Ending Actions:	Monitor target features to further confirm ID						
<b>Declarative:</b> Aircraft operating procedures Tactics Standard Operating procedures Anticipation of target representation on display for conditions of the day Interpretation of Map/Imagery/Onboard Sensors and symbology/LINK 16							
<b>Situational:</b> Specific target features (e g terrain, large features surrounding target, smaller unique target features, weather, etc ) Target IR picture Surrounding IR picture Target Radar Picture Surrounding Radar picture							
<b>KNOWLEDGE</b>							

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None
Psychomotor:	1	Automatised, highly learned
Memory:	5	Memorization
External Influenced Variables	None	
Output Interface:	DDI, Maps, Photos	

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

Vision:	4	Spatial encoding, visual pattern recognition
Audition:	0	None
Kinesthetic:	0	None
Memory:	3	Spatial decoding
Internal Influenced Variables	Belief that the target displayed corresponds to the assigned target for attack	
Input Interface:	DDI, Maps Photos	

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 2 2(g)	Goal:	that the PGM weapons are delivered	Goal ID:	7 2 2 2(g)	Source Goal:	7 2 2 2(g)
<b>Description:</b>							
Depress and hold the weapons release button (Pickle button) on the stick Confirm that the PGM weapons are being released Once all weapons have been released, release Pickle button Confirm weapons release on the SMS page on the DDI							
<b>Auditory Category:</b>		0 None		<b>Operator:</b>		Pilot	
<b>External Cue:</b>		Not Applicable		<b>Priority:</b>		2	
<b>Cognitive Category:</b>		1 Automatized, highly learned (easy to do for a trained person)		<b>Allowable Delay (K):</b>		1 2	
<b>Initiating Conditions:</b>		Weapons solution validated and at the release altitude and or range		<b>Interruptable:</b>		No	
<b>Initiating Actions:</b>		Monitor displayed release symbology		<b>Sheddable:</b>		No	
<b>Ending Conditions:</b>		Weapons have been released.		<b>Resumable:</b>		Not Applicable	
<b>Ending Actions:</b>		Stop attending to goal		<b>Shed If Late:</b>		Not Applicable	
<b>Feeds Back to Higher Level Goal</b>		No					
<b><u>KNOWLEDGE</u></b>							
<b>Declarative:</b>				Aircraft operating procedures Tactics Standard Operating procedures Weapons operating procedures			
<b>Situational:</b>				Type of weapon released, weather conditions, visibility, winds, sun, terrain, target type			

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0 None	<b>Voice:</b>	0 None
<b>Psychomotor:</b>	1 1 Simple	<b>Psychomotor:</b>	1 Automatised, highly learned
<b>Memory:</b>	1 Commit to memory (LTM and STM)	<b>Memory:</b>	5 Memorization
<b>External Influenced Variables</b> Weapon release from aircraft , Pickle button depression, Weapons release symbology			
<b>Output Interface:</b> HUD, DDI, HOTAS, Pickle button			
<b>INPUT/SENSATION</b>			
<b>Vision:</b>	1 2 Pattern, spatial relationship, tracking, graphic displays	<b>Vision:</b>	4 Spatial encoding, visual pattern recognition
<b>Audition:</b>	1 Tone or simple auditory signal	<b>Audition:</b>	1 Automatised, highly learned perception
<b>Kinesthetic:</b>	1 1 Simple stimulus	<b>Kinesthetic:</b>	1 Automatised, highly learned perception
<b>Memory:</b>	2 4 Semantically coded	<b>Memory:</b>	3 Verbal decoding
<b>Internal Influenced Variables</b> Belief that the weapons have been delivered and that the symbology displays that fact			
<b>Input Interface:</b> HUD, DDI, Aircraft movement at weapons release,			

## Annex I - CF18 Air to Ground PCT Goal Analysis Results

<b>IP Number</b>	7 2 2 2(0)	<b>Goal:</b>	that the target designation symbology is on the desired target aim point	<b>Goal ID:</b>	7 2 2 2(0)	<b>Source Goal:</b>	7 2 2 2(0)
<b>Description:</b>							
Adjust and update target designation on the desired aim point by moving the TDC If required, turn the aircraft to the right to ensure constant field of view to the target							
<b>Auditory Category:</b>	0	None		<b>Operator:</b>	Pilot	<b>Completion Time:</b>	40
<b>External Cue:</b>		Not Applicable		<b>Priority:</b>	3	<b>Allowable Delay (K):</b>	<b>Difficulty (D)</b>
<b>Cognitive Category:</b>	4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)		<b>Interruptable:</b>	No	<b>Sheddable:</b>	No
<b>Initiating Conditions:</b>	Target designation has move off the desired Aim point, or LGB has been released and is guiding to target			<b>Resumable:</b>	Not Applicable	<b>Shed If Late:</b>	Not Applicable
<b>Initiating Actions:</b>	Depress and move the TDC			<b>Feeds Back to Higher Level Goal</b> No			
<b>Ending Conditions:</b>	Designation has been kept on the desired aim point and/or weapons impact						
<b>Ending Actions:</b>	Monitor target designation						
				<b>Declarative:</b>			
				Aircraft operating procedures Tactics Standard Operating procedures Designation procedures Sensor displays and symbology interpretation			
				<b>Situational:</b>			
				Specific target area features (e g terrain, large features surrounding target, weather, etc ), type of attack, type of weapon delivered			

<b><u>OUTPUT/BEHAVIOUR</u></b>		<b><u>COGNITIVE/PERCEPTUAL PROCESS</u></b>	
<b>Voice:</b>	0 None	<b>Voice:</b>	0 None
<b>Psychomotor:</b>	1 2 Difficult but familiar	<b>Psychomotor:</b>	4 Spatial encoding
<b>Memory:</b>	1 Commit to memory (LTM and STM)	<b>Memory:</b>	5 Memorization
<b>External Influenced Variables</b> Target designation symbology			
<b>Output Interface:</b> HUD, DDI			

<b><u>INPUT/SENSATION</u></b>		<b><u>COGNITIVE/PERCEPTUAL PROCESS</u></b>	
<b>Vision:</b>	1 2 Pattern, spatial relationship, tracking, graphic displays	<b>Vision:</b>	4 Spatial encoding, visual pattern recognition
<b>Audition:</b>	0 None	<b>Audition:</b>	0 None
<b>Kinesthetic:</b>	1 1 Simple stimulus	<b>Kinesthetic:</b>	1 Automatised, highly learned perception
<b>Memory:</b>	2 4 Semantically coded	<b>Memory:</b>	3 Verbal decoding
<b>Internal Influenced Variables</b> Belief that the designation is on the desired target aim point			
<b>Input Interface:</b> DDI			

<b>IP Number</b>	7 2 2 2(m)	<b>Goal:</b>	that the attack is coordinated with others to ensure safety and success	<b>Goal ID:</b>	7 2 2 2(m)	<b>Source Goal:</b>	7 2 2 1(l)
<b>Description:</b>							
Maintain spacing by confirming that other Aircraft, Elements or Sections are conducting target attack as planned							
Ensure that own attack is conducted within the allotted time window Adjust spacing or routing to target to							
maintain required spacing from other Aircraft, Elements or Sections ahead Maintain lookout to ensure all collision							
potentials are avoided, and to provide mutual support. Change flight path as necessary							
<b>Auditory Category:</b>	0	None					
<b>External Cue:</b>		Not Applicable					
<b>Cognitive Category:</b>	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops					
<b>Initiating Conditions:</b>	Designated range from target where attack has to be coordinated						
<b>Initiating Actions:</b>	Fly own attack as planned						
<b>Ending Conditions:</b>	Egress completed.						
<b>Ending Actions:</b>	Monitor other elements						
				<b>Operator:</b>	Pilot	<b>Completion Time:</b>	
				<b>Priority:</b>	4	<b>Allowable Delay (K):</b>	1 3
				<b>Interruptable:</b>	Yes	<b>Difficulty (D):</b>	
				<b>Resumable:</b>	Yes	<b>Sheddable:</b>	No
				<b>Feeds Back to Higher Level Goal</b>	No	<b>Shed If Late:</b>	Not Applicable
				<b><u>KNOWLEDGE</u></b>			
				<b>Declarative:</b>	Aircraft operating procedures Tactics Standard Operating procedures Mass attack coordination		
				<b>Situational:</b>	Number and type of aircraft involved Specific target area features (e.g. terrain, large features surrounding target, weather, etc ), type of attack, type of weapon delivered.		

## **OUTPUT/BEHAVIOUR**

Voice: 0 None

**Psychomotor:** 1 2 Difficult but familiar

**Memory:** 1 Commit to memory (LTM and STM)

**External Influenced Variables** Aircraft position, altitude, attitude, heading, speed and g

**Output Interface:** Aircraft controls and throttles

## INPUT/SENSATION

**Vision:** 2 Peripheral

**Audition:** 0 None

**Kinesthetic:**

**Memory:** 2.5 Complex operation

### Internal Influenced Variables

**Input Interface:** HUD, HSD

## COGNITIVE/PERCEPTUAL PROCESS

**Voice:** 0 None

**Psychomotor:** 4 Spatial encoding

**Memory:** 5 Memorization

## COGNITIVE/PERCEPTUAL PROCESS

**Vision:** 1 Automatised, highly learned perception

**Audition:** 0 None

**Kinesthetic:** 0 None

**Memory:** 5 Recall

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 3 1(a)	Goal:	that radar contact is established with formation members	Goal ID:	7 2 3 1(a)	Source Goal:	7 1 1 2(a)
Description:							
Adjust and/or confirm Radar parameters to ensure searching the desired airspace Observe Radar picture being built							
on the Radar display Confirm position of other mission elements by moving radar cursors over their displayed							
position and reading the displayed Bearing(or Bull eye)/Range/Altitude							
Auditory Category: 0 None							
External Cue: Not Applicable							
Cognitive Category: 5 Memorization/recall, calculation, estimation, deduction, reasoning, high level ops							
Initiating Conditions: Attack completed							
Initiating Actions: Switch to Radar Air-to-Air search mode							
Ending Conditions: Radar contact displayed on DDI							
Ending Actions: Monitor Radar contact							
<u>OUTPUT/BEHAVIOUR</u>				<u>COGNITIVE/PERCEPTUAL PROCESS</u>			
Voice: 0 None				Voice: 0 None			
Psychomotor: 1 2 Difficult but familiar				Psychomotor: 4 Spatial encoding			
Memory: 1 Commit to memory (LTM and STM)				Memory: 5 Memorization			
External Influenced Variables Radar symbology							
Output Interface: DDI (Radar display), HUD							
<u>INPUT/SENSATION</u>				<u>COGNITIVE/PERCEPTUAL PROCESS</u>			
Vision: 1 2 Pattern, spatial relationship, tracking, graphic displays				Vision: 4 Spatial encoding, visual pattern recognition			
Audition: 0 None				Audition: 0 None			
Kinesthetic: 0 None				Kinesthetic: 0 None			
Memory: 2 4 Semantically coded				Memory: 3 Verbal decoding			
Internal Influenced Variables Belief that the radar contact displayed corresponds to the formation member desired							
Input Interface: DDI (Radar display), HUD							

Goal ID:	7 2 3 1(a)	Operator:	Pilot	Completion Time:	
Priority:	4	Allowable Delay (K):	1 75	Difficulty (D):	
Interruptable:		Sheddable:	No		
Resumable:	Yes	Shed If Late:	Not Applicable		
Feeds Back to Higher Level Goal	No				
<u>KNOWLEDGE</u>					
Declarative:					
Aircraft operating procedures Tactics Standard Operating procedures Radar operation					
Situational:					
Mission requirements and objectives. Specifics of the tactical situation (e.g. threat/friendly forces, weather, terrain, etc.)					

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 3 1(b)	Goal:	that the pilot confirms the position of the formation by visually referencing his Link 16 display on the HSD	Goal ID:	7 2 3 1(b)	Source Goal:	7 1 1 3(d)					
<b>Description:</b> Adjust and/or confirm LINK 16/MIDS Tactical Display parameters to ensure the desired airspace is covered Reduce range scale to ensure clarity of displayed information Observe picture being built on the LINK 16/MIDS Tactical Display Visually confirm position of Formation members by analyzing displayed information Mentally build formation position and situational awareness												
Auditory Category:	0	None										
External Cue:	Not Applicable											
Cognitive Category:	1	Automatized, highly learned (easy to do for a trained person)										
Initiating Conditions:	Tactical phase of mission begins											
Initiating Actions:	Visually reference Link 16 tactical display on HSD											
Ending Conditions:	Tactical phase of mission ends											
Ending Actions:	Stop visually referencing Link 16 tactical display on HSD											
<u>KNOWLEDGE</u>												
<b>Declarative:</b> Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, Link 16 displays/controls												
<b>Situational:</b> Tactical situation, phase of mission, mission objectives/requirements, correlation of displayed information with information displayed from other sources												

KNOWLEDGE

Declarative:

Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, Link 16 displays/controls

Situational:

Tactical situation, phase of mission, mission objectives/requirements, correlation of displayed information with information displayed from other sources

COGNITIVE/PERCEPTUAL PROCESS

Voice: 0 None

Psychomotor: 1 Automatised, highly learned

Memory: 5 Memorization

COGNITIVE/PERCEPTUAL PROCESS

Vision: 4 Spatial encoding, visual pattern recognition

Audition: 0 None

Kinesthetic: 0 None

Memory: 3 Spatial decoding



Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 3 1(c)	Goal:	that the post-attack formation join-up is completed safely and expeditiously	Goal ID:	7 2 3 1(c)	Source Goal:	7 1 1 3(c)
Description:	Formation Join-up is performed by using a combination of a visual overtake and cut-off angle. The cut-off angle is maintained by varying bank angle as the aircraft is moving up the reference line. The geometry of the rejoin is such that an increase in speed will require a decrease in bank to maintain the cut-off angle and vice versa. Radar lock-on may be used to assist. The Vc is monitored on the HUD and represent your true closure (both longitudinal and lateral). Establish a crosscheck between speed, bank angle and the reference line. The closure is then reduced as the desired formation position is attained. To rejoin in close formation, the aircraft is moved to one side about 2-3 aircraft widths and about 50 feet low. 50 to						
Auditory Category:	0	None					
External Cue:		Not Applicable					
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops					
Initiating Conditions:	Individual attacks have been completed. Formation join-up is required.						
Initiating Actions:	Formation members begin to maneuver IAW the pre-planned join-up procedure.						
Ending Conditions:	Desired tactical formation is established.						
Ending Actions:	Desired tactical formation is maintained.						
<u>KNOWLEDGE</u>							
Declarative:							
Standard operating procedures, aircraft controls and throttles, mission briefing.							
Situational:							
Environmental conditions, relative formation following attack phase, surface-to-air and air-to-air threats in near proximity, timing/routing constants.							

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None	Voice:	0	None
Psychomotor:	1 3	Complex and or unfamiliar	Psychomotor:	5	Memorization/recall, calculation, estimation, deduction, reasoning
Memory:	1	Commit to memory (LTM and STM)	Memory:	5	Memorization
External Influenced Variables	Aircraft position, altitude, attitude, heading, speed and g Radar/AMIRS parameters.				
Output Interface:	Aircraft controls and throttles HUD Sensor displays				

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

Vision:	1 2	Pattern, spatial relationship, tracking, graphic displays	Vision:	4	Spatial encoding, visual pattern recognition
Audition:	0	None	Audition:	0	None
Kinesthetic:	1 2	Complex stimulus	Kinesthetic:	4	Spatial encoding
Memory:	2 4	Semantically coded	Memory:	3	Verbal decoding
Internal Influenced Variables	Belief that the formation join-up has been conducted.				
Input Interface:	Visual cues Sensor information (AMIRS/Radar) Link 16				

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 3 1(d)	Goal:	that visual contact is established with formation members	Goal ID:	7 2 3 1(d)	Source Goal:	7.1 1 2(f)
<b>Description:</b>							
From SA built with Aircraft sensors and LINK 16/MIDS, look in the estimated bearing and range of the mission elements Start a visual search pattern focusing on the estimated distance of the contacts Find mission elements visually							
Auditory Category:		0 None		Operator:		Pilot	
External Cue:		Not Applicable		Priority:		4	
Cognitive Category:		4 Spatial encoding, decoding, pattern recognition (reading maps, giving directions)		Allowable Delay (K):		1 75	
Initiating Conditions:		Attack completed		Interruptable:		No	
Initiating Actions:		Start search pattern		Resumable:		Yes	
Ending Conditions:		Visual contact established		Shed If Late:		Not Applicable	
Ending Actions:		Monitor visual contact		Feeds Back to Higher Level Goal		No	
<b><u>KNOWLEDGE</u></b>							
Declarative:				Visual search pattern technique			
<b>Situational:</b>							
Initiating Actions:				Mission requirements and objectives Specifics of the tactical situation (e.g. threat/friendly forces, weather, terrain, etc.) Distance from visual contact			

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0 None	Voice:	0 None
Psychomotor:	1 1 Simple	Psychomotor:	1 Automatised, highly learned
Memory:	1 Commit to memory (LTM and STM)	Memory:	5 Memorization
External Influenced Variables None			
Output Interface: None			
<b>INPUT/SENSATION</b>			
Vision:	2 Peripheral	Vision:	1 Automatised, highly learned perception
Audition:	0 None	Audition:	0 None
Kinesthetic:	0 None	Kinesthetic:	0 None
Memory:	2 3 Spatially coded	Memory:	3 Spatial decoding
Internal Influenced Variables Belief that visual contact is established with formation member.			
Input Interface: HUD			

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 3 1(c)	Goal:	that AMIRS contact is established with formation members	Goal ID:	7 2 3 1(c)	Source Goal:	7 1 1 2(g)
<b>Description:</b> Adjust and/or confirm AMIRS parameters to ensure searching the desired airspace Observe IR picture being built on the AMIRS display Confirm position of other mission elements by moving AMIRS cursors over their displayed position and reading the displayed bearing and elevation							
<b>Auditory Category:</b>		0 None		<b>Operator:</b>		Pilot	
<b>External Cue:</b>		Not Applicable		<b>Priority:</b>		4	
<b>Cognitive Category:</b>		5 Memorization/recall, calculation, deduction, reasoning, high level ops		<b>Allowable Delay (K):</b>		1 75	
<b>Initiating Conditions:</b>		Attack completed		<b>Difficulty (D):</b>		Sheddable: No	
<b>Initiating Actions:</b>		Switch to AMIRS Air-to-Air search mode		<b>Resumable:</b>		Yes	
<b>Ending Conditions:</b>		AMIRS contact displayed on DDI		<b>Shed If Late:</b>		Not Applicable	
<b>Ending Actions:</b>		Monitor AMIRS contact		<b>Feeds Back to Higher Level Goal</b>		No	
<b><u>KNOWLEDGE</u></b>							
<b>Declarative:</b> Aircraft operating procedures Tactics. Standard Operating procedures AMIRS operation				<b>Situational:</b> Mission requirements and objectives Specifics of the tactical situation (e.g. threat/friendly forces, weather, terrain, etc.)			

<b><u>OUTPUT/BEHAVIOUR</u></b>				<b><u>COGNITIVE/PERCEPTUAL PROCESS</u></b>			
<b>Voice:</b>		0 None		<b>Voice:</b>		0 None	
<b>Psychomotor:</b>		1 2 Difficult but familiar		<b>Psychomotor:</b>		4 Spatial encoding	
<b>Memory:</b>		1 Commit to memory (LTM and STM)		<b>Memory:</b>		5 Memorization	
<b>External Influenced Variables</b> AMIRS symbology							
<b>Output Interface:</b> DDI (AMIRS display), HUD							

<b><u>INPUT/SENSATION</u></b>				<b><u>COGNITIVE/PERCEPTUAL PROCESS</u></b>			
<b>Vision:</b>		1 2 Pattern, spatial relationship, tracking, graphic displays		<b>Vision:</b>		4 Spatial encoding, visual pattern recognition	
<b>Audition:</b>		0 None		<b>Audition:</b>		0 None	
<b>Kinesthetic:</b>		0 None		<b>Kinesthetic:</b>		0 None	
<b>Memory:</b>		2 4 Semantically coded		<b>Memory:</b>		3 Verbal decoding	
<b>Internal Influenced Variables</b> Belief that the AMIRS contact displayed corresponds to the formation member desired							
<b>Input Interface:</b> DDI (AMIRS display), HUD							

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 3 1(f)	Goal:	that visual contact with other formation members is established using NVGs	Goal ID:	7 2 3 1(f)	Source Goal:	7 1 1 2(h)
Description:	From SA built with Aircraft sensors and LINK 16/MIDS, look in the estimated bearing and range of the mission elements. Start a visual search pattern at the estimated location of the contacts. Find mission elements visually with NVG						
Auditory Category:		0	None	Operator:	Pilot	Completion Time:	
External Cue:		Not Applicable		Priority:	4	Allowable Delay (K):	1 5
Cognitive Category:		4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)	Interruptable:		Difficulty (D)	
Initiating Conditions:		Tactical phase of mission begins	Night, VMC flight conditions	Resumable:	Not Applicable	Sheddable:	No
Initiating Actions:		Visual cues and other sensor information (Link 16/AMIRS/Radar) are used to begin NVG search for other formation member		Feeds Back to Higher Level Goal	No	Shed If Late:	Not Applicable
Ending Conditions:		NVG contact with other formation members is established		<u>KNOWLEDGE</u>			
Ending Actions:		Tactical phase of mission ends. Day and/or IMC flight conditions occur	NVG contact with other formation members no longer required	Declarative:			
				Visual/NVG scan techniques, standard operating procedures, NVG operating procedures.			
				Situational:			
				Environmental conditions, tactical situation, mission objectives/requirements			

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None	Voice:	0	None
Psychomotor:	1 1	Simple	Psychomotor:	1	Automatised, highly learned
Memory:	1	Commit to memory (LTM and STM)	Memory:	5	Memorization
External Influenced Variables		None			
Output Interface:		NVGs			

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

Vision:	1 2	Pattern, spatial relationship, tracking, graphic displays	Vision:	4	Spatial encoding, visual pattern recognition
Audition:	0	None	Audition:	0	None
Kinesthetic:	0	None	Kinesthetic:	0	None
Memory:	2 3	Spatially coded	Memory:	3	Spatial decoding
Internal Influenced Variables		Belief that NVG contact has been established with other formation members			
Input Interface:		NVG visual cues.			

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 3 2(b)	Goal:	that the aircraft is Egressed at Low altitude	Goal ID:	7 2 3 2(b)	Source Goal:	7 2 3 2(b)
<b>Description:</b>							
Maintain constant altitude above ground by anticipating rising/descending terrain, and establish appropriate climb or descend    Manoeuvre aircraft and visually confirm flight path by looking through Velocity Vector in the HUD							
Maintain desired Ground Speed by adjusting throttles appropriately    Conduct visual Cross Check    Perform terrain clearing tasks							
<b>Auditory Category:</b> 0    None							
<b>External Cue:</b> Not Applicable							
<b>Cognitive Category:</b> 5    Memorization/recall, calculation, estimation, deduction, reasoning, high level ops							
<b>Initiating Conditions:</b> Post target RV completed							
<b>Initiating Actions:</b> Fly aircraft towards next egress waypoint							
<b>Ending Conditions:</b> Aircraft has crossed the FLOT Home Bound and transitions to RTB phase.							
<b>Ending Actions:</b> Stop attending to goal							
<b>Operator:</b> Pilot							
<b>Priority:</b> 6							
<b>Allowable Delay (K):</b> <b>Difficulty (D)</b> 0 3							
<b>Interruptable:</b> Yes							
<b>Sheddable:</b> No							
<b>Resumable:</b> No							
<b>Shed If Late:</b> Not Applicable							
<b>Feeds Back to Higher Level Goal</b> No							
<b><u>KNOWLEDGE</u></b>							
<b>Declarative:</b>							
Aircraft operating procedures    Tactics    Standard Operating procedures    Applicable orders, regulations and plans							
<b>Situational:</b>							
Mission requirements and objectives    Specifics of the tactical situation (e.g. threat/friendly forces, weather, terrain, etc.)    Details of on-going or planned activities							

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None	Voice:	0	None
Psychomotor:	1.2	Difficult but familiar	Psychomotor:	4	Spatial encoding
Memory:	1	Commit to memory (LTM and STM)	Memory:	5	Memorization
External Influenced Variables	Aircraft position, altitude, attitude, heading, speed and g				
Output Interface:	Aircraft controls and throttles Aircraft displays (HUD,DDI,HSD)				

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

Vision:	2	Peripheral	Vision:	1	Automatised, highly learned perception
Audition:	0	None	Audition:	0	None
Kinesthetic:	0	None	Kinesthetic:	0	None
Memory:	2 3	Spatially coded	Memory:	3	Spatial decoding
Internal Influenced Variables	Belief that the Aircraft has reached the end of the egress portion and is transitioning to RTB				
Input Interface:	HSD, HUD, Maps				

## Annex I - CF18 Air to Ground PCT Goal Analysis Results

<b>IP Number</b>	7 2 5 1(a)	<b>Goal:</b>	that the tactical roles are established in the formation	<b>Goal ID:</b>	7 2 5 1(a)	<b>Source Goal:</b>	7 2 5 1(a)
<b>Description:</b>	Individual responsibilities in addition to lookout are						
	Lead, terrain avoidance, navigation, tactical control of the formation, mission leader and bombs on target,						
	Number three terrain avoidance, back-up navigation, element position keeping, tactical control of number four, deputy mission and tactical lead and bombs on target,						
	Wingmen terrain avoidance, position keeping, lookout, bombs on target and monitor sensors						
<b>Auditory Category:</b>	0	<b>None</b>					
<b>External Cue:</b>	Not Applicable						
<b>Cognitive Category:</b>	5	<b>Memorization/recall, calculation, estimation, deduction, reasoning, high level ops</b>					
<b>Initiating Conditions:</b>	Ingress is initiated						
<b>Initiating Actions:</b>	Attend to individual responsibilities						
<b>Ending Conditions:</b>	Tactical roles have been established.						
<b>Ending Actions:</b>	Continue attending to individual responsibilities						
<b>Operator:</b>	Pilot						
<b>Priority:</b>	6						
<b>Interruptable:</b>	Yes						
<b>Resumable:</b>	No						
<b>Feeds Back to Higher Level Goal</b>	No						
<b>Completion Time:</b>	999						
<b>Allowable Delay (K):</b>	Difficulty (D) 0.4						
<b>Sheddable:</b>	No						
<b>Shed If Late:</b>	Not Applicable						
<b><u>KNOWLEDGE</u></b>							
<b>Declarative:</b>	Tactics Standard Operating procedures Applicable orders, regulations and plans Formation responsibilities						
<b>Situational:</b>	Position in the formation, threat, mission						

## OUTPUT/BEHAVIOUR

**Voice:** 1 Voice Output

**Psychomotor:** 1 2 Difficult but familiar

**Memory:** 1 Commit to memory (LTM and STM)

### External Influenced Variables

**Output Interface:** Aircraft controls and throttles Aircraft displays (HUD,DDI,HSD) Radios

## INPUT/SENSATION

**Vision:** 2 Peripheral

**Audition:**

5 Speech input (attended to, salient to the primary task)

**Kinesthetic.** 1 1 Simple stimulus

**Memory:** 2.5 Complex operation

### Internal Influenced Variables

Input Interface:	Aircraft displays (HUD,DDI,HSD)	Radios
<p>  </p>	<p>  </p>	<p>  </p>

## COGNITIVE/PERCEPTUAL PROCESS

**Voice:** 3 Speech production

**Psychomotor:** 4 Spatial encoding

**Memory:** 5 Memorization

### ation position on Displays

## COGNITIVE/PERCEPTUAL PROCESS

**Vision:** 1 Automatised, highly learned perception

**Audition:** 5 Verbal decoding, speech recognition

**Kinesthetic:** 1 Automatised, highly learned perception

**Memory:** 5 Recall

## Annex I - CF18 Air to Ground PCT Goal Analysis Results

<b>IP Number</b>	7 2 5 1(b)	<b>Goal:</b>	that aircraft control and flight position are maintained	<b>Goal ID:</b>	7 2 5 1(b)	<b>Source Goal:</b>	7 2 5 1(b)
<b>Description:</b>							
Maintain aircraft control and position by adjusting Power, Aircraft pitch and roll to obtain desired Airspeed and Flight Path    Adjust Flight position by using airspeed or geometry							
<b>Auditory Category:</b>	0	None					
<b>External Cue:</b>	Not Applicable						
<b>Cognitive Category:</b>	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops					
<b>Initiating Conditions:</b>	Domestic portion completed, tactical portion initiated						
<b>Initiating Actions:</b>	Maintain aircraft control						
<b>Ending Conditions:</b>	Tactical portion of the mission completed						
<b>Ending Actions:</b>	Maintain aircraft control						
<b>Operator:</b>	Pilot	<b>Completion Time:</b>	999	<b>Allowable Delay (K):</b>	0	<b>Difficulty (D)</b>	0
<b>Priority:</b>	6	<b>Sheddable:</b>	No	<b>Shed If Late:</b>	Not Applicable		
<b>Interruptable:</b>	No	<b>Feeds Back to Higher Level Goal</b>	No				
<b><u>KNOWLEDGE</u></b>							
<b>Declarative:</b>							
Aircraft operating procedures    Tactics. Standard Operating procedures    Applicable orders, regulations and plans							
<b>Situational:</b>							
Mission requirements and objectives    Specifics of the tactical situation (e g threat/friendly forces, weather, terrain, etc )    Details of on-going or planned activities							

## OUTPUT/BEHAVIOUR

**Voice:** 0 None

**Psychomotor:**  
1 2 Difficult but familiar

**Memory:** 1 Commit to memory (LTM and STM)

### External Influenced Variables

**Output Interface:** Aircraft controls and throttles Aircraft displays (HUD, DDI, HSD)

## INPUT/SENSATION

**Vision:** 2 Peripheral

**Audition:** 0 None

**Kinesthetic:**

**Memory:** 2.5 Complex operation

### Internal Influenced Variables

**Input Interface:** Aircraft displays (HUD, DDI, HSD)

## COGNITIVE/PERCEPTUAL PROCESS

**Voice:** 0 None

**Psychomotor:** 4 Spatial encoding

**Memory:** 5 Memorization

## Formation position on Displays

## COGNITIVE/PERCEPTUAL PROCESS

**Vision:** 1 Automatised, highly learned perception

**Audition:** 0 Nonc

**Kinesthetic:** 0 None

**Memory:** 5 Recall

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 5 1(c)	Goal:	that a turn is executed to change direction while maintaining formation and mutual support	Goal ID:	7 2 5 1(c)	Source Goal:	7 2 5 1(c)
<b>Description:</b>							
Manoeuvre Turns are initiated either via voice on the Discreet frequency or by a wing flash from lead. The check turn is accomplished by turning all formation members simultaneously of the desired angle, while keeping formation. Check turns are typically 30 degrees							
The in place turn is accomplished by turning all formation members simultaneously to 90-180 degrees							
The delayed turn is accomplished by having one formation member turning to the desired heading while the remaining position his aircraft and initiates the turn to maintain formation							
The cross turn is accomplished by turning towards each other and reestablishing formation after turn is completed							
<b>Auditory Category:</b> 0 None							
<b>External Cue:</b> Not Applicable							
<b>Cognitive Category:</b> 5 Memorization/recall, calculation, estimation, deduction, reasoning, high level ops							
<b>Initiating Conditions:</b> Radio call from lead, wing flash from lead, position enroute							
<b>Initiating Actions:</b> Roll aircraft in the desired direction.							
<b>Ending Conditions:</b> Desired heading has been attained and desired formation regained							
<b>Ending Actions:</b> Stop attending to goal							
<b>Declarative:</b> Aircraft operating procedures Tactics Standard Operating procedures. Formation keeping procedures							
<b>Situational:</b> Mission requirements and objectives Specifics of the tactical situation (c.g threat/friendly forces, weather, terrain, etc ) Details of on-going or planned activities							

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	1 Voice Output	Voice:	3 Speech production
Psychomotor:	1 2 Difficult but familiar	Psychomotor:	4 Spatial encoding
Memory:	1 Commit to memory (LTM and STM)	Memory:	5 Memorization
<b>External Influenced Variables</b> Aircraft position, altitude, attitude, heading, speed and g Formation position on Displays Aircraft position in relation to formation member			
<b>Output Interface:</b> Aircraft controls and throttles Aircraft displays (HUD,DDI,HSD)			

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

Vision:	2 Peripheral	Vision:	1 Automatised, highly learned perception
Audition:	5 Speech input (attended to, salient to the primary task)	Audition:	5 Verbal decoding, speech recognition
Kinesthetic:	1 1 Simple stimulus	Kinesthetic:	1 Automatised, highly learned perception
Memory:	2 5 Complex operation	Memory:	5 Recall
<b>Internal Influenced Variables</b> belief that the manoeuvre turn has been completed and that the desired formation position has been regained			
<b>Input Interface:</b> Aircraft displays (HUD,DDI)			



Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 5 1(d)	Goal:	that the pilot confirms the position of the formation by visually referencing his Link 16 display on the HSD	Goal ID:	7 2 5 1(d)	Source Goal:	7 1 1 3(d)
Description:	Adjust and/or confirm LINK 16/MIDS Tactical Display parameters to ensure the desired airspace is covered Reduce range scale to ensure clarity of displayed information Observe picture being built on the LINK 16/MIDS Tactical Display Visually confirm position of Formation members by analyzing displayed information Mentally build formation position and situational awareness						
Auditory Category:		0 None		Operator:	Pilot	Completion Time:	
External Cue:		Not Applicable		Priority:	4	Allowable Delay (K):	1 75
Cognitive Category:		1 Automated, highly learned (easy to do for a trained person)		Interruptable:	Yes	Sheddable:	No
Initiating Conditions:		Tactical phase of mission begins		Resumable:	Yes	Shed If Late:	Not Applicable
Auditory Category:		0 None		Feeds Back to Higher Level Goal No			
External Cue:		Not Applicable		<u>KNOWLEDGE</u>			
Cognitive Category:		1 Automated, highly learned (easy to do for a trained person)		Declarative:			
Initiating Conditions:		Tactical phase of mission begins		Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, Link 16 displays/controls			
Initiating Actions:		Visually reference Link 16 tactical display on HSD		Situational:			
Ending Conditions:		Tactical phase of mission ends		Tactical situation, phase of mission, mission objectives/requirements, correlation of displayed information with information displayed from other sources			
Ending Actions:		Stop visually referencing Link 16 tactical display on HSD.					

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0 None	Voice:	0 None
Psychomotor:	1 1 Simple	Psychomotor:	1 Automatised, highly learned
Memory:	1 Commit to memory (LTM and STM)	Memory:	5 Memorization
External Influenced Variables	HSD settings/controls Link 16 settings/controls	<u>COGNITIVE/PERCEPTUAL PROCESS</u>	
Output Interface:	HOTAS HSD Link-16	Vision:	4 Spatial encoding, visual pattern recognition
<u>INPUT/SENSATION</u>		Audition:	0 None
Vision:	1 2 Pattern, spatial relationship, tracking, graphic displays	Kinesthetic:	0 None
Audition:	0 None	Memory:	3 Spatial decoding
Kinesthetic:	0 None	Internal Influenced Variables Belief that the formation position has been confirmed on Link 16 tactical display	
Memory:	2 3 Spatially coded	Input Interface: HSD, Link 16 Display/Controls	

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 5 2(a)	Goal:	that the ideal tactical formation is selected and flown	Goal ID:	7.2.5.2(a)	Source Goal:	7 2 5 2(a)
<b>Description:</b> The lead will select the optimal formation for the tactical situation and direct his formation members to adopt formation Wingmen will position their aircraft to optimize formation at the desired range and altitude delta from their lead							
Auditory Category:	5	Voice Output	Operator: Pilot				
External Cue:	No	Priority: 4					
Cognitive Category:	4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)	Allowable Delay (K): 1 5				
Initiating Conditions:			The overall tactical situation has changed				
Initiating Actions:			Lead selects and directs new appropriate formation Wingmen initiate manoeuvres to achieve formation				
Ending Conditions:			Correct formation is achieved				
Ending Actions:			Correct formation is maintained				
Situational:			Mission requirements and objectives Specifics of the tactical situation (e.g. threat/friendly forces, weather, terrain, etc.)				
Declarative:			Tactics Standard Operating procedures Applicable orders, regulations and plans				
Feeds Back to Higher Level Goal			No				
Sheddable:			No				
Shed If Late:			Not Applicable				
<u>KNOWLEDGE</u>							

<u>OUTPUT/BEHAVIOUR</u>			<u>COGNITIVE/PERCEPTUAL PROCESS</u>		
<b>Voice:</b>	1	Voice Output	<b>Voice:</b>	3	Speech production
<b>Psychomotor:</b>	1 2	Difficult but familiar	<b>Psychomotor:</b>	4	Spatial encoding
<b>Memory:</b>	1	Commit to memory (LTM and STM)	<b>Memory:</b>	5	Memorization
<b>External Influenced Variables</b> All aircraft's positions, altitudes, attitudes, headings, speeds and g			<b>Memory:</b> 3    Spatial decoding		
<b>Output Interface:</b> Aircraft controls and throttles    Aircraft displays (HUD,DDI,HSD)			<b>Internal Influenced Variables</b> Lead's belief that present formation is ideal for present tactical situation		
<b>Input Interface:</b> Outside view    Radar    Link 16/MIDS display (for tactical picture)    HUD, DDI			<b>Input Interface:</b> Outside view    Radar    Link 16/MIDS display (for tactical picture)    HUD, DDI		

## Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 5 2(b)	Goal:	that all aspects of a proper visual lookout are conducted, including maintaining visual contact with other formation members	Goal ID:	7 2 5 2(b)	Source Goal:	7 2 5 2(b)
Description:							
Maintain visual mutual support by maintaining sight of formation members while establishing visual lookout							
Conduct visual lookout responsibilities							
Auditory Category: 0 None							
External Cue: Not Applicable							
Cognitive Category: 1 Automatized, highly learned (easy to do for a trained person)							
Initiating Conditions: VMC flying conditions in a tactical arena							
Initiating Actions: All formation members commence a continuous task-shared and appropriate crosscheck of various external cues, depending on							
Ending Conditions: Mission ends or IMC conditions are encountered							
Ending Actions: New appropriate crosschecks are initiated (I E IMC radar crosscheck)							
<u>OUTPUT/BEHAVIOUR</u>							
Voice: 0 None							
Psychomotor: 1 2 Difficult but familiar							
Memory: 1 Commit to memory (LTM and STM)							
External Influenced Variables None							
Output Interface: Aircraft controls and throttles							
<u>INPUT/SENSATION</u>							
Vision: 1 2 Pattern, spatial relationship, tracking, graphic displays							
Audition: 0 None							
Kinesthetic: 0 None							
Memory: 2 3 Spatially coded							
Internal Influenced Variables Perception that all aspects of visual lookout technique are being completed, and confirmation that all appropriate formation members are visual							
Input Interface: Outside view, HUD							

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 5 2(c)	Goal:	that awareness and good positioning is maintained on other formation members and/or formation elements using non visual methods	Goal ID:	7 2 5 2(c)	Source Goal:	7 2 5 2(c)
<b>Description:</b> Positional mutual support is maintained by keeping SA on formation members position utilizing sensors and data link. Remain within sensor and weapons range to support formation members							
		Operator:	Pilot	Completion Time:		999	
		Priority:	4	Allowable Delay (K):		1 5	Difficulty (D)
		Interruptable:		Sheddable:		No	
		Resumable:	Not Applicable	Shed If Late:		Not Applicable	
		Feeds Back to Higher Level Goal	No	<u>KNOWLEDGE</u>			
Auditory Category:	2	Speech Input (in background)		Declarative:			
External Cue:	No			Tactics Applicable orders, regulations and plans Standard Operating Procedures Sensor displays and symbology interpretation			
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops					
Initiating Conditions:			Change in tactical environment with respect to beyond visual range formation members or other elements				
Initiating Actions:			Sensors and or datalink are checked to build updated tactical awareness of BVR friendlys and manoeuvres are initiated to maintain				
Ending Conditions:			Appropriate tactical BVR formation is achieved				
Ending Actions:			Appropriate tactical BVR formation is maintained				
				<u>SITUATIONAL</u>			
				Mission Plan Specifics of the tactical situation (e.g. threat/friendly forces, weather, terrain, etc.)			

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	1	Voice Output	<b>Voice:</b>	3	Speech production
<b>Psychomotor:</b>	0	None	<b>Psychomotor:</b>	0	None
<b>Memory:</b>	1	Commit to memory (LTM and STM)	<b>Memory:</b>	5	Memorization
<b>External Influenced Variables</b>					
		None			
<b>Output Interface:</b>	Aircraft controls and throttles Aircraft displays (HUD,DDI,HSD), Radar AMIRS				

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

<b>Vision:</b>	1 2	Pattern, spatial relationship, tracking, graphic displays	<b>Vision:</b>	4	Spatial encoding, visual pattern recognition
<b>Audition:</b>	5	Speech input (attended to, salient to the primary task)	<b>Audition:</b>	5	Verbal decoding, speech recognition
<b>Kinesthetic:</b>	0	None	<b>Kinesthetic:</b>	0	None
<b>Memory:</b>	2 4	Semantically coded	<b>Memory:</b>	3	Verbal decoding
<b>Internal Influenced Variables</b> Perception that all formation elements are in position to give mutual support					
<b>Input Interface:</b> Radar AMIRS Link 16/MIDS display (for tactical picture) HUD, DDI					

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 5 2(e)	Goal:	that all aspects of a proper NVG visual lookout are conducted, including maintaining NVG visual contact with other formation members	Goal ID:	7 2 5 2(e)	Source Goal:	7 2 5 2(c)		
<b>Description:</b> Maintain visual mutual support by maintaining sight with NVG of formation members while establishing visual lookout Conduct visual lookout responsibilities									
				Operator:	Pilot	Completion Time:	999		
				Priority:	9	Allowable Delay (K):	1 4	Difficulty (D)	
				Interruptable:	No	Sheddable:	No		
				Resumable:	Not Applicable	Shed If Late:	Not Applicable		
				Feeds Back to Higher Level Goal	No				
<b>Auditory Category:</b>								<b><u>KNOWLEDGE</u></b>	
<b>External Cue:</b>								<b>Declarative:</b>	
<b>Cognitive Category:</b>								NVG Visual lookout technique Night NVG tactical formation flying Standard Operating Procedures	
<b>Initiating Conditions:</b>								Night VMC flying conditions in a tactical arena	
<b>Initiating Actions:</b>								All formation members commence a continuous task-shared and appropriate crosscheck of various external cues using NVG's,	
<b>Ending Conditions:</b>								Mission ends or IMC conditions are encountered	
<b>Ending Actions:</b>								New appropriate crosschecks are initiated (1 E IMC radar crosscheck)	

<b>OUTPUT/BEHAVIOUR</b>		<b>COGNITIVE/PERCEPTUAL PROCESS</b>	
Voice:	0 None	Voice:	0 None
Psychomotor:	1 3 Complex and or unfamiliar	Psychomotor:	5 Memorization/recall, calculation, estimation, deduction, reasoning
Memory:	1 Commit to memory (LTM and STM)	Memory:	5 Memorization
External Influenced Variables		None	
Output Interface:		Night Vision Goggles Aircraft controls and throttles Aircraft displays (HUD,DDI,HSD)	
<b>INPUT/SENSATION</b>		<b>COGNITIVE/PERCEPTUAL PROCESS</b>	
Vision:	1 2 Pattern, spatial relationship, tracking, graphic displays	Vision:	4 Spatial encoding, visual pattern recognition
Audition:	0 None	Audition:	0 None
Kinesthetic:	0 None	Kinesthetic:	0 None
Memory:	2 3 Spatially coded	Memory:	3 Spatial decoding
Internal Influenced Variables		Perception that all aspects of NVG visual lookout technique are being completed, and confirmation that all appropriate formation members are NVG visual	
Input Interface:		Outside view through NVG's, HUD	

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 5 2(f)	Goal:	that radio communications are transmitted using HOTAS switch	Goal ID:	7 2 5 2(f)	Source Goal:	7 2 5 2(f)
Description:							
Communicate to other formation Members by pressing on the HOTAS radio switch							
Auditory Category:				Operator:	Pilot	Completion Time:	5
External Cue:				Priority:	5	Allowable Delay (K):	Difficulty (D)
Cognitive Category:				Interruptable:		Sheddable:	Yes
Initiating Conditions:				Resumable:	Not Applicable	Shed If Late:	No
				Feeds Back to Higher Level Goal	No		
<u>KNOWLEDGE</u>							
				Declarative:			
				Systems knowledge (radio ) Standard radio terminology			
Initiating Actions:				Situational:			
Ending Conditions:				Any external cue			
Ending Actions:							

OUTPUT/BEHAVIOUR

Voice: 1 Voice Output  
Psychomotor: 1 1 Simple  
Memory: 0 None

External Influenced Variables Level of radio clutter/emissions  
Output Interface: Radios

INPUT/SENSATION

Vision: 0 None  
Audition: 5 Speech input (attended to, salient to the primary task)  
Kinesthetic: 0 None  
Memory: 2 1 Accessible, familiar  
Internal Influenced Variables Belief that transmission has left the radio  
Input Interface: Radio

COGNITIVE/PERCEPTUAL PROCESS

Voice: 3 Speech production  
Psychomotor: 1 Automatised, highly learned  
Memory: 0 None

COGNITIVE/PERCEPTUAL PROCESS

Vision: 0 None  
Audition: 5 Verbal decoding, speech recognition  
Kinesthetic: 0 None  
Memory: 1 Automatised

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 6 1(a)	Goal:	that correct ground track is maintained	Goal ID:	7 2 6 1(a)	Source Goal:	7 2 6 1(a)
<b>Description:</b> Accurately follow the Ground Track information displayed in the HSD and HUD Fly on the displayed heading required to the next waypoint Monitor heading, drift, routing and ground track information Make appropriate heading corrections to regain and maintain desired ground track							
				Operator:	Pilot	Completion Time:	999
				Priority:	6	Allowable Delay (K):	Difficulty (D) 0 2
				Interruptable:	Yes	Sheddable:	No
				Resumable:	No	Shed If Late:	Not Applicable
				Feeds Back to Higher Level Goal No			
<u>KNOWLEDGE</u>							
Auditory Category:				0 None			
External Cue:				Not Applicable			
Cognitive Category:				4 Spatial encoding, decoding, pattern recognition (reading maps, giving directions)			
Initiating Conditions:				Aircraft's track over ground changes, or requires a change			
Initiating Actions:				HSD and HUD are checked to adjust heading			
Ending Conditions:				Correct groundtrack is achieved			
Ending Actions:				Groundtrack is maintained and monitored			
				Declarative: Sensor displays and symbology interpretation Basic navigation techniques			
				Situational: Specific route and/or map Winds			

OUTPUT/BEHAVIOUR

Voice:	0 None	Voice:	0 None
Psychomotor:	1 1 Simple	Psychomotor:	1 Automatised, highly learned
Memory:	1 Commit to memory (LTM and STM)	Memory:	5 Memorization
External Influenced Variables Aircraft heading			
Output Interface: Aircraft controls and throttles Aircraft displays (HUD,DDI,HSD) Maps			

INPUT/SENSATION

Vision:	1 2 Pattern, spatial relationship, tracking, graphic displays	Vision:	4 Spatial encoding, visual pattern recognition
Audition:	0 None	Audition:	0 None
Kinesthetic:	0 None	Kinesthetic:	0 None
Memory:	2 3 Spatially coded	Memory:	3 Spatial decoding
Internal Influenced Variables Perception that the aircraft's groundtrack corresponds to the desired groundtrack			
Input Interface: HUD, DDI's, HSD, Map			

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 6 1(b)	Goal:	that all aspects of an Air Coordination Order are followed	Goal ID:	7 2 6 1(b)	Source Goal:	7 2 6 1(b)
Description:							
Adhere to Air Coordination Order by accurately following the ACO routing displayed on the HSD Follow ACO							
Airspeed, Altitude and routing restrictions							
				Operator:	Pilot	Completion Time:	999
				Priority:	3	Allowable Delay (K):	1 2
				Interruptable:	No	Difficulty (D)	
				Resumable:	Not Applicable	Sheddable:	No
				Feeds Back to Higher Level Goal	No	Shed If Late:	Not Applicable
<u>KNOWLEDGE</u>							
Auditory Category:				Declarative:			
External Cue:				Sensor displays and symbology interpretation Applicable orders, regulations and plans Standard Operating procedures			
Cognitive Category:							
Initiating Conditions:				Initiating Actions:			
An ACO routing or restriction is encountered				HSD, Maps, and primary instruments(a/s, alt, etc) are monitored and crosschecked with ACO			
				Ending Conditions:			
				ACO routing or restriction no longer applies			
				Ending Actions:			
				Stop attending to goal			
				<u>Situational:</u>			
				Specific ACO Mission Plan			

OUTPUT/BEHAVIOUR

Voice: 0 None

Psychomotor: 0 None

Memory: 1 Commit to memory (LTM and STM)

External Influenced Variables Aircraft position, altitude, attitude, heading, speed and g

Output Interface: Aircraft controls and throttles Aircraft displays (HUD,DDI,HSD) Maps

INPUT/SENSATION

Vision: 1 1 Text, Dial Reading

Audition: 0 None

Kinesthetic: 0 None

Memory: 2 3 Spatially coded

Internal Influenced Variables Belief that formation/aircraft is adhering to planned ACO restriction

Input Interface: HUD, DDI's, HSD, Map

COGNITIVE/PERCEPTUAL PROCESS

Voice: 0 None

Psychomotor: 0 None

Memory: 5 Memorization

COGNITIVE/PERCEPTUAL PROCESS

Vision: 3 Verbal encoding

Audition: 0 None

Kinesthetic: 0 None

Memory: 3 Spatial decoding



## Annex I - CF18 Air to Ground PCT Goal Analysis Results

<b>IP Number</b>	7 2 6 1(c)	<b>Goal:</b>	that correct groundspeed is flown in order to comply with timings	<b>Goal ID:</b>	7 2 6 1(c)	<b>Source Goal:</b>	7 2 6 1(c)
<b>Description:</b>	Adjust G/S by increasing or decreasing IAS Monitor ETA over waypoint on the HSD and fine tune G/S as required to arrive at required timing.						
<b>Auditory Category:</b>	0	None					
<b>External Cue:</b>	5	Not Applicable					
<b>Cognitive Category:</b>	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops					
<b>Initiating Conditions:</b>	A required timing exists in the future						
<b>Initiating Actions:</b>	Groundspeed is checked and adjusted based on other timings and navigation/HSD information						
<b>Ending Conditions:</b>	Timing is met						
<b>Ending Actions:</b>	Groundspeed is adjusted based on the next required timing, or groundspeed becomes a nonessential item						
<b>OUTPUT/BEHAVIOUR</b>							
<b>Voice:</b>	0	None					
<b>Psychomotor:</b>	1	Simple					
<b>Memory:</b>	1	Commit to memory (LTM and STM)					
<b>External Influenced Variables</b>	Aircraft position, attitude, heading, speed and g						
<b>Output Interface:</b>	Aircraft controls and throttles Aircraft displays (HUD,DDI,HSD) Maps						
<b>INPUT/SENSATION</b>							
<b>Vision:</b>	1	2	Pattern, spatial relationship, tracking, graphic displays				
<b>Audition:</b>	0	None					
<b>Kinesthetic:</b>	0	None					
<b>Memory:</b>	2	3	Spatially coded				
<b>Internal Influenced Variables</b>	Perception that groundspeed is appropriate for next timing						
<b>Input Interface:</b>	HUD, DDI's, HSD, Map						

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 6 1(d)	Goal:	that all Air Coordination Order restricted area's are avoided	Goal ID:	7 2 6 1(d)	Source Goal:	7 2 6 1(d)
Description:							
Avoid ACO restricted areas by monitoring HSD displayed information and verifying information on the Area MAP							
Operator: Pilot							
Priority: 3							
Allowable Delay (K): 1 25							
Difficulty (D)							
Interruptable: No							
Sheddable: No							
Resumable: Not Applicable							
Shed If Late: Not Applicable							
Feeds Back to Higher Level Goal No							
Auditory Category: 0 None							
External Cue: Not Applicable							
Cognitive Category: 4							
Spatial encoding, decoding, pattern recognition (reading maps, giving directions)							
Initiating Conditions: An ACO restricted area is encountered							
Initiating Actions: HSD and Maps are monitored and crosschecked with ACO							
Ending Conditions: ACO restricted area no longer applies							
Ending Actions: Stop attending to goal							
Declarative:							
Sensor displays and symbology interpretation Applicable orders, regulations and plans Standard Operating procedures							
Situational:							
Specific ACO Mission Plan							
KNOWLEDGE							

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 6 2(a)	Goal:	that correct navigation is carried out and confirmed through visual ground references	Goal ID:	7 2 6 2(a)	Source Goal:	7 2 6 2(a)
Description:							
Conduct Navigation by visually finding ground references to verify that the correct routing is followed							
Operator: Pilot							
Priority: 6							
Allowable Delay (K):							
Difficulty (D) 0.15							
Interruptable: Yes							
Sheddable: No							
Resumable: No							
Shed If Late: Not Applicable							
Feeds Back to Higher Level Goal No							
KNOWLEDGE							
Declarative:							
Basic navigation techniques Sensor displays and symbology interpretation							
Situational:							
Specific route and/or map Mission Plan							
Initiating Actions:							
Outside visual cues are crosschecked with maps to ensure correct navigation							
Ending Conditions:							
IMC conditions are encountered or mission ends							
Ending Actions:							
Other navigation techniques(HSD) are used exclusively							

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0	None	<b>Voice:</b>	0	None	
<b>Psychomotor:</b>	1	1 Simple	<b>Psychomotor:</b>	1	Automatised, highly learned	
<b>Memory:</b>	1	Commit to memory (LTM and STM)	<b>Memory:</b>	5	Memorization	
<b>External Influenced Variables</b> Aircraft position, altitude, attitude, heading, speed and g						
<b>Output Interface:</b>		Aircraft controls and throttles    HUD    Maps				
<u><b>INPUT/SENSATION</b></u>						
<b>Vision:</b>	1	2	Pattern, spatial relationship, tracking, graphic displays	<b>Vision:</b>	4	Spatial encoding, visual pattern recognition
<b>Audition:</b>	0	None		<b>Audition:</b>	0	None
<b>Kinesthetic:</b>	0	None		<b>Kinesthetic:</b>	0	None
<b>Memory:</b>	2	3	Spatially coded	<b>Memory:</b>	3	Spatial decoding
<b>Internal Influenced Variables</b> Perception that visual ground references match those expected from map (and/or memory)						
<b>Input Interface:</b>		Outside view, HUD, Map				

## Annex I - CF18 Air to Ground PCT Goal Analysis Results

<b>IP Number</b> 7 2 6 2(b)	<b>Goal:</b> that correct navigation is carried out and confirmed through HSD (sensor) information	<b>Goal ID:</b> 7 2 6 2(b)	<b>Source Goal:</b> 7 2 6 2(b)
<b>Description:</b> Select routing on the HSD System navigation in the CF-18 is simply a matter of following the displayed routing information on the HSD			
<b>Auditory Category:</b> 0 None	<b>External Cue:</b> Not Applicable	<b>Operator:</b> Pilot	<b>Completion Time:</b> 10
<b>Cognitive Category:</b> 4 Spatial encoding, decoding, pattern recognition (reading maps, giving directions)	<b>Initiating Conditions:</b> General navigation is required	<b>Priority:</b> 6	<b>Allowable Delay (K):</b> <b>Difficulty (D)</b> 0 15
		<b>Interruptable:</b> Yes	<b>Sheddable:</b> No
		<b>Resumable:</b> No	<b>Shed If Late:</b> Not Applicable
		<b>Feeds Back to Higher Level Goal</b> No	
<b><u>KNOWLEDGE</u></b>			
<b>Declarative:</b> Sensor displays and symbology interpretation Basic navigation techniques		<b>Situational:</b> Specific route and/or map Mission Plan	
<b><u>OUTPUT/BEHAVIOUR</u></b>			
<b>Voice:</b> 0 None	<b>Voice:</b> 0 None		
<b>Psychomotor:</b> 0 None	<b>Psychomotor:</b> 0 None		
<b>Memory:</b> 1 Commit to memory (LTM and STM)	<b>Memory:</b> 5 Memorization		
<b>External Influenced Variables</b> Aircraft position, altitude, attitude, heading, speed and g			
<b>Output Interface:</b> Aircraft controls and throttles Aircraft displays (HUD,DDI,HSD) Maps			
<b><u>INPUT/SENSATION</u></b>			
<b>Vision:</b> 1 2 Pattern, spatial relationship, tracking, graphic displays	<b>Vision:</b> 4 Spatial encoding, visual pattern recognition		
<b>Audition:</b> 0 None	<b>Audition:</b> 0 None		
<b>Kinesthetic:</b> 0 None	<b>Kinesthetic:</b> 0 None		
<b>Memory:</b> 2 3 Spatially coded	<b>Memory:</b> 3 Spatial decoding		
<b>Internal Influenced Variables</b> Perception that sensor information match those expected from map (and/or memory)			
<b>Input Interface:</b> HUD, DDI's, HSD, Map			

## Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 6 2(c)	Goal:	that navigation systems are updated, or specific points are designated, using one of various systems/methods	Goal ID:	7 2 6 2(c)	Source Goal:	7 2 6 2(c)
Description:							
NAVDSG	Conduct a NAVDSG by first selecting the desired W/AYPOINT/OAP on the HSD Then press (tile 15) on the HSD						
Over fly Designation First, ensure you are in NAV or A/G Master mode, then assign the TDC to the HSD and depress the TDC when you are accurately positioned over the point you want to designate							
HUD Rencle Designation Select the system in NAV or A/G Master Mode and undesignate Ensure that the weapons system is in AUTO, and assign the TDC to the HUD Manoeuvrc the a/c until the reticle is over the target							
Auditory Category:	0	None					
External Cue:	Not Applicable						
Cognitive Category:	4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)					
Initiating Conditions: The navigation systems require either enhanced precision or a temporary target designation							
Initiating Actions: TDC is assigned to appropriate DDI or HUD TDC button is depressed and slewed, or NAVDES is selected on HSD							
Ending Conditions: Update is accepted or Designation is deemed acceptable							
Ending Actions: Stop attending to goal							
<u>OUTPUT/BEHAVIOUR</u>							
Voice:	0	None	Voice: 0 None				
Psychomotor:	1 2	Difficult but familiar	Psychomotor: 4 Spatial encoding				
Memory:	1	Commnt to memory (LTM and STM)	Memory: 5 Memorization				
External Influenced Variables Aircraft position, altitude, attitude, heading, speed and g							
Output Interface: Aircraft controls and throttles Aircraft displays (HUD,DDI,HSD) Maps, Radar, AMIRS, Mav display							
<u>INPUT/SENSATION</u>							
Vision:	1 2	Pattern, spatial relatioship, tracking, graphic displays	Vision: 4 Spatial encoding, visual pattern recognition				
Audition:	0	None	Audition: 0 None				
Kinesthetic:	1 1	Simple stimulus	Kinesthetic: 1 Automatised, highly learned percpection				
Memory:	2 5	Complex operation	Memory: 5 Recall				
Internal Influenced Variables Perception that desired update/designation point (from map and/or memory) has been identified and selected							
Input Interface: Outside view HUD,DDI,HSD Maps, Radar display, AMIRS display, Mav display							

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 6 2(d)	Goal:	that the basic external navigation technique "watch/map/ground," is employed to ensure accurate navigation	Goal ID:	7 2 6 2(d)	Source Goal:	7 2 6 2(d)
<b>Description:</b> The Elapsed Time is checked and a point ahead of the associated Elapsed Time marking on the map is selected for identification. When this point is identified on the ground then the navigation errors can be determined and a correction can be made. Common methods for correcting back to track or for getting back on time are Track corrections and Time corrections							
Auditory Category:	0	None					
External Cue:	Not Applicable						
Cognitive Category:	4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)					
Initiating Conditions:	Precise navigation is required in a preplanned day low level routing						
Initiating Actions:	A Timer(watch) is verified for the planned position, a map is verified for features expected at position, and outside references(						
Ending Conditions:	Position is verified or navigation corrections are made		<b>Situational:</b> Specific route and/or map Mission Plan Weather conditions, visibility, winds, sun, terrain				
Ending Actions:	Process is reinitiated, or other navigation techniques are employed						

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0	None	<b>Voice:</b>	0	None
<b>Psychomotor:</b>	1	1 Simple	<b>Psychomotor:</b>	1	Automatised, highly learned
<b>Memory:</b>	1	Commit to memory (LTM and STM)	<b>Memory:</b>	5	Memorization
<b>External Influenced Variables</b>			None		
<b>Output Interface:</b>	Aircraft controls and throttles HUD Maps				
<b>INPUT/SENSATION</b>			<b>COGNITIVE/PERCEPTUAL PROCESS</b>		
<b>Vision:</b>	1	2 Pattern, spatial relationship, tracking, graphic displays	<b>Vision:</b>	4	Spatial encoding, visual pattern recognition
<b>Audition:</b>	0	None	<b>Audition:</b>	0	None
<b>Kinesthetic:</b>	0	None	<b>Kinesthetic:</b>	0	None
<b>Memory:</b>	2	3 Spatially coded	<b>Memory:</b>	3	Spatial decoding
<b>Internal Influenced Variables</b>	Perception that the map information( taken from watch information) corresponds to the visual ground references				
<b>Input Interface:</b>	Outside view, HUD, map				

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 6 2(e)	Goal:	that the Time on Target is achieved accurately through adjustments of aircraft speed and routing	Goal ID:	7 2 6 2(c)	Source Goal:	7 2 6 2(e)
Description:							
Adjust G/S and routing to arrive at target at predetermined TOT							

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None	Voice:	0	None
Psychomotor:	1	Simple	Psychomotor:	1	Automatised, highly learned
Memory:	1	Commit to memory (LTM and STM)	Memory:	5	Memorization
External Influenced Variables	Aircraft position, altitude, attitude, heading, speed and g				
Output Interface:	Aircraft controls and throttles Aircraft displays (HUD,DDI,HSD) Maps				
		<u>INPUT/SENSATION</u>			
Vision:	1 2	Pattern, spatial relationship, tracking, graphic displays	Vision:	4	Spatial encoding, visual pattern recognition
Audition:	0	None	Audition:	0	None
Kinesthetic:	0	None	Kinesthetic:	0	None
Memory:	2 3	Spatially coded	Memory:	3	Spatial decoding
Internal Influenced Variables	Perception that groundspeed and route is appropriate for TOT				
Input Interface:	Outside view,HUD, DDI, HSD, map				

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 6.2(f)	Goal:	that correct navigation is carried out and confirmed through NVG visual ground references	Goal ID:	7 2 6 2(f)	Source Goal:	7 2 6 2(f)			
Description:	Conduct Navigation by visually finding ground references with NVG to verify that the correct routing is followed									
		Operator:	Pilot	Completion Time:	20					
		Priority:	6	Allowable Delay (K):	Difficulty (D)	0 4				
		Interruptable:	Yes	Sheddable:	No					
		Resumable:	No	Shed If Late:	Not Applicable					
		Feeds Back to Higher Level Goal		No						
		Auditory Category:		0	None					
		External Cue:		Not Applicable						
		Cognitive Category:		4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)					
		Initiating Conditions:		Navigation is required in Night/VMC conditions						
		Initiating Actions:		Outside NVG visual cues are crosschecked with maps to ensure correct navigation						
		Ending Conditions:		IMC conditions are encountered or mission ends						
		Ending Actions:		Other navigation techniques(HSD) are used exclusively						
		Declarative:		NVG lookout techniques. Sensor displays and symbology interpretation	Basic navigation techniques					
		Situational:		Specific route and/or map	Mission Plan			Weather conditions, visibility, ambient light		
		KNOWLEDGE								

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None
Psychomotor:	1 3	Complex and or unfamiliar
Memory:	1	Commit to memory (LTM and STM)
External Influenced Variables	Aircraft position, altitude, attitude, heading, speed and g	
Output Interface:	Night Vision Goggles Aircraft controls and throttles Aircraft displays (HUD,DDI,HSD) Maps	

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

Vision:	1 2	Pattern, spatial relationship, tracking, graphic displays
Audition:	0	None
Kinesthetic:	0	None
Memory:	2 3	Spatially coded
Internal Influenced Variables	Perception that NVG visual ground references match those expected from map (and/or memory)	
Input Interface:	Outside view through NVG's, HUD, Map	



Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 6 3(a)	Goal:	that all significant weather is avoided using both visual and sensor cues	Goal ID:	7 2 6 3(a)	Source Goal:	7 2 6 3(a)
<b>Description:</b> Monitor by visually looking outside the cockpit at significant weather build ups. Adjust sensors parameter to optimize weather detection and monitor displayed weather on the DDIs. Avoid weather by changing routing and flight profile.							
<b>Operator:</b> Pilot							
<b>Priority:</b> 2 <b>Allowable Delay (K):</b> 1 1 <b>Difficulty (D)</b>							
<b>Interruptable:</b> No <b>Sheddable:</b> No							
<b>Resumable:</b> Not Applicable <b>Shed If Late:</b> Not Applicable							
<b>Feeds Back to Higher Level Goal</b> No							
<b><u>KNOWLEDGE</u></b>							
<b>Declarative:</b> Basic Flying      Sensor displays and symbology interpretation							
<b>Situational:</b> Visual Lookout Cues      Radar cues      Study of weather forecast and actual weather							

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0 None	<b>Voice:</b>	0 None
<b>Psychomotor:</b>	1 2 Difficult but familiar	<b>Psychomotor:</b>	4 Spatial encoding
<b>Memory:</b>	1 Commit to memory (LTM and STM)	<b>Memory:</b>	5 Memorization
<b>External Influenced Variables</b>		Aircraft position, altitude, attitude, heading, speed and g	
<b>Output Interface:</b>		Radar Aircraft controls and throttles Aircraft displays (HUD,DDI,HSD)	

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

Vision:	1 1	Text, Dial Reading	Vision:	3	Verbal encoding
Audition:	0	None	Audition:	0	None
Kinesthetic:	1 1	Simple stimulus	Kinesthetic:	1	Automatised, highly learned perception
Memory:	2 3	Spacially coded	Memory:	3	Spatial decoding
Internal Influenced Variables	Perception that aircraft/formaton will avoid significant weather				
Input Interface:	Outside view, radar display, HUD				

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 6 3(b)	Goal:	that all obstacles are avoided	Goal ID:	7 2 6 3(b)	Source Goal:	7 2 6 3(b)
Description:							
Monitor obstacles visually		Avoid obstacles by changing routing and flight path					
Operator: Pilot							
Priority: 1		Allowable Delay (K):		Difficulty (D)			
Interruptable: No		Sheddable: No					
Resumable: Not Applicable		Shed If Late: Not Applicable					
Feeds Back to Higher Level Goal		No					
KNOWLEDGE							
Auditory Category: 0 None		Declarative:					
External Cue: Not Applicable		Basic Flying					
Cognitive Category: 1		Automatized, highly learned (easy to do for a trained person)					
Initiating Conditions:		An obstacle is encountered					
Initiating Actions:		Manoeuvre to avoid obstacle					
Ending Conditions:		Obstacle is avoided, or obstacle avoidance no longer becomes a factor (high level)					
Ending Actions:		Stop attending to goal					
Situational:		Visual Lookout Cues Knowledge of area obstacles (map study ) Specific mission plan					

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None
Psychomotor:	4	Spatial encoding
Memory:	5	Memorization

External Influenced Variables    Aircraft position, altitude, attitude, heading, speed and g

Output Interface:    Aircraft controls and throttles    HUD    Maps

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

<b>Vision:</b>	2	Peripheral	<b>Vision:</b>	1	Automatised, highly learned perception	
<b>Audition:</b>	0	None	<b>Audition:</b>	0	None	
<b>Kinesthetic:</b>	1	1	Simple stimulus	<b>Kinesthetic:</b>	1	Automatised, highly learned perception
<b>Memory:</b>	2	1	Accessible, familiar	<b>Memory:</b>	1	Automatised

Internal Influenced Variables    Perception that aircraft is not in conflict with an obstacle

Input Interface:    Outside view, HUD

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 6 3(c)	Goal:	that all terrain is avoided	Goal ID:	7 2 6 3(c)	Source Goal:	7 2 6 3(c)
Description:	At all times while flying in the low-level environment the primary task is terrain clearance Monitor terrain visually Avoid terrain by changing flight path						
Auditory Category:		0	None	Operator:	Pilot	Completion Time:	999
External Cue:		Not Applicable		Priority:	1	Allowable Delay (K):	Difficulty (D)
Cognitive Category:		1	Automatized, highly learned (easy to do for a trained person)	Interruptable:	No	Sheddable:	No
Initiating Conditions:		Terrain is encountered		Resumable:	Not Applicable	Shed If Late:	Not Applicable
Initiating Actions:		Manoeuvre to avoid terrain		Feeds Back to Higher Level Goal	No		
Ending Conditions:		Terrain is avoided or no longer becomes a factor (high level)		<u>KNOWLEDGE</u>			
Ending Actions:		Stop attending to goal		Declarative:			
				Basic Flying			
				Situational:			
				Visual Lookout Cues Knowledge of area terrain (map study )			
				Specific mission plan			

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None
Psychomotor:	1 2	Difficult but familiar
Memory:	1	Commit to memory (LTM and STM)
External Influenced Variables	Aircraft position, altitude, attitude, heading, speed and g	
Output Interface:	Aircraft controls and throttles HUD Maps	

Voice:	0	None
Psychomotor:	4	Spatial encoding
Memory:	5	Memorization

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

Vision:	2	Peripheral
Audition:	1	Tone or simple auditory signal
Kinesthetic:	1 1	Simple stimulus
Memory:	2 1	Accessible, familiar
Internal Influenced Variables	Perception that aircraft is not in conflict with terrain	
Input Interface:	Outside view, HUD	

Vision:	1	Automatised, highly learned perception
Audition:	1	Automatised, highly learned perception
Kinesthetic:	1	Automatised, highly learned perception
Memory:	1	Automatised

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 6 3(c)	Goal:	that all other aircraft are avoided	Goal ID:	7 2 6 3(c)	Source Goal:	7 2 6 3(c)
Description:	Monitor other Aircraft by establishing cross check between visual look out and sensor information displayed on the HUD and DDIs Avoid other Aircraft by changing flight path						
				Operator:	Pilot	Completion Time:	999
				Priority:	1	Allowable Delay (K):	Difficulty (D)
				Interruptable:	No	Sheddable:	No
				Resumable:	Not Applicable	Shed If Late:	Not Applicable
				Feeds Back to Higher Level Goal	No		
				<u>KNOWLEDGE</u>			
				Auditory Category:	0	None	
				External Cue:	Not Applicable		
				Cognitive Category:	2	Passive monitoring of speech/auditory signals	
				Initiating Conditions:	An aircraft or formation is encountered		
				Initiating Actions:	Manoeuvre to avoid aircraft		
				Ending Conditions:	Aircraft is avoided		
				Ending Actions:	Stop attending to goal		
				Situational:	Visual Lookout Cues Specific mission plan		

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 7 1(a)	Goal:	that the desired radar modes and parameters are set for search and monitored by visually referencing the radar display on the right DDI	Goal ID:	7 2 7 1(a)	Source Goal:	7 2 7 1(a)
Description:							
Confirm that the desired Radar modes and parameters are set for search Monitor radar visually on the DDIs							
Adjust radar azimuth and elevation search to cover assigned airspace							
Auditory Category:							
0 None							
External Cue:							
Not Applicable							
Cognitive Category:							
1 Automated, highly learned (easy to do for a trained person)							
Initiating Conditions:							
Begin the tactical phase of the mission							
Initiating Actions:							
Pilot observes the radar search parameters on the radar display on the right DDI							
Ending Conditions:							
Tactical phase of the mission ends							
Ending Actions:							
Perform other non-tactical mission tasks							
Operator:							
Pilot							
Priority:							
4							
Interruptable:							
Yes							
Resumable:							
Yes							
Feeds Back to Higher Level Goal							
No							
Sheddable:							
No							
Shed If Late:							
Not Applicable							
Completion Time:							
3							
Allowable Delay (K):							
1 75							
Difficulty (D)							
<u>KNOWLEDGE</u>							
Declarative:							
Aircraft operating procedures, standard operating procedures, radar displays/controls							
Situational:							
Tactical situation, aircraft altitude/speed, mission objectives/requirements, weather, terrain							

OUTPUT/BEHAVIOUR

Voice: 0 None

Psychomotor: 1 1 Simple

Memory: 1 Commit to memory (LTM and STM)

External Influenced Variables radar search modes, radar antenna elevation, radar azimuth, other radar parameters

Output Interface: DDI, HOTAS, APG-73

INPUT/SENSATION

Vision: 1 1 Text, Dial Reading

Audition: 0 None

Kinesthetic: 1 1 Simple stimulus

Memory: 2 3 Spatially coded

Internal Influenced Variables Belief that the assigned radar search parameters have been set and are being monitored and maintained

Input Interface: Radar display on right DDI

COGNITIVE/PERCEPTUAL PROCESS

Voice: 0 None

Psychomotor: 1 Automatised, highly learned

Memory: 5 Memorization

COGNITIVE/PERCEPTUAL PROCESS

Vision: 3 Verbal encoding

Audition: 0 None

Kinesthetic: 1 Automatised, highly learned perception

Memory: 3 Spatial decoding

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 7 1(b)	Goal:	that radar contact on formation members is monitored and maintained by referencing the APG-73 display on the right DDI	Goal ID:	7 2 7 1(b)	Source Goal:	7 2 7 1(b)
Description:							
To monitor radar contact on formation members, the pilot will visually reference his radar display on his right DDI. He will also adjust the settings on his APG 73, most notably the azimuth, PRF, and elevation (using either HOTAS or manual pushbuttons), to allow him to maintain radar contact on friendly formation members							
Auditory Category:	0	None					
External Cue:	Not Applicable						
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops					
Initiating Conditions:	Radar contact with formation members is established						
Initiating Actions:	Right DDI is visually referenced for radar contact information and current radar parameters.						
Ending Conditions:	Radar contact on formation members no longer required						
Ending Actions:	Pilot returns radar to assigned search parameters						
COGNITIVE/PERCEPTUAL PROCESS							
Voice:	0	None	Voice:	0	None		
Psychomotor:	4	Spatial encoding	Psychomotor:	4	Spatial encoding		
Memory:	5	Memorization	Memory:	5	Memorization		
External Influenced Variables Radar search and track modes, radar antenna elevation, radar azimuth, other radar parameters Other formation member's RWR							
Output Interface: DDI, HOTAS, APG-73							
INPUT/SENSATION							
Vision:	4	Spatial encoding, visual pattern recognition	Vision:	4	Spatial encoding, visual pattern recognition		
Audition:	0	None	Audition:	0	None		
Kinesthetic:	1	Automatised, highly learned perception	Kinesthetic:	1	Automatised, highly learned perception		
Memory:	3	Verbal decoding	Memory:	3	Verbal decoding		
Internal Influenced Variables Belief that radar contact is being maintained on other formation members							
Input Interface: Radar display on right DDI correlated with other independent information (AMIRS, Link-16, visual, external agency, air-to-air tacan, communications)							

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 7 1(h)	Goal:	that the pilot accurately monitors and interprets the tactical Link-16 information displayed on his HSD	Goal ID:	7 2 7 1(h)	Source Goal:	7 2 7 1(h)
Description:							
The pilot will visually reference his HSD to monitor the Link 16 display							
Auditory Category:							
0 None							
External Cue:							
Not Applicable							
Cognitive Category:							
5 Memorization/recall, calculation, estimation, deduction, reasoning, high level ops							
Initiating Conditions:							
Tactical phase of the mission begins Link 16 information is required by the pilot							
Initiating Actions:							
Pilot visually references the Link 16 display on the HSD							
Ending Conditions:							
Link 16 information is no longer required and/or the tactical phase of the mission ends							
Ending Actions:							
Current mission tasks performed Tactical Link 16 information, displayed on the HSD, is no longer monitored							
Declarative:							
Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, Link 16 displays/controls							
KNOWLEDGE							
Situational:							
Tactical situation, phase of mission, mission objectives/requirements, correlation of displayed information with information displayed from other sources							

OUTPUT/BEHAVIOUR

Voice: 0 None

Psychomotor: 0 None

Memory: 1 Commit to memory (LTM and STM)

External Influenced Variables Link 16 display settings and parameters

Output Interface: HSD, LINK-16

COGNITIVE/PERCEPTUAL PROCESS

Voice: 0 None

Psychomotor: 0 None

Memory: 5 Memorization

INPUT/SENSATION

Vision: 1 2 Pattern, spatial relationship, tracking, graphic displays

Audition: 0 None

Kinesthetic: 0 None

Memory: 2.4 Semantically coded

Internal Influenced Variables Belief that the tactical situation is being monitored on the Link 16 display, and all relevant tactical information is being interpreted by the pilot

Input Interface: Link 16 display on HSD, correlation of other tactical information (radar/AMIRS/external agencies) with Link 16 displayed information

COGNITIVE/PERCEPTUAL PROCESS

Vision: 4 Spatial encoding, visual pattern recognition

Audition: 0 None

Kinesthetic: 0 None

Memory: 3 Verbal decoding

<b>IP Number</b>	7 2 7 2(a)	<b>Goal:</b>	that the assigned AMIRS search parameters are set and monitored by visually referencing the AMIRS display on the left DDI	<b>Goal ID:</b>	7 2 7 2(a)	<b>Source Goal:</b>	7 2 7 2(a)
<b>Description:</b>							
The pilot will set his assigned AMIRS search parameters via HOTAS or manual selection. He will monitor and maintain these parameters by visually checking the AMIRS display on the left DDI. If they need adjusting, he will accomplish this via HOTAS/manual selection of the AMIRS search parameters on the left DDI.							
<b>Auditory Category:</b>	0	None					
<b>External Cue:</b>	Not Applicable						
<b>Cognitive Category:</b>	1	Automatized, highly learned (easy to do for a trained person)					
<b>Initiating Conditions:</b>	Tactical phase of the mission begins. Tactical IR imagery is required by the pilot while operating in day/night VMC conditions						
<b>Initiating Actions:</b>	TDC assigned to the left DDI. Pilot visually checks the current AMIRS search parameters displayed on the left DDI.						
<b>Ending Conditions:</b>	Tactical phase of mission ends. AMIRS information no longer required. IMC flight conditions encountered.						
<b>Ending Actions:</b>	TDC re-assigned away from left DDI. AMIRS display no longer monitored.						
			<b>Operator:</b>	Pilot			
			<b>Priority:</b>	4	<b>Allowable Delay (K):</b>	1 75	<b>Difficulty (D)</b>
			<b>Interruptable:</b>		<b>Sheddable:</b>	No	
			<b>Resumable:</b>	No	<b>Shed If Late:</b>	Not Applicable	
			<b>Feeds Back to Higher Level Goal</b>	No			
			<b><u>KNOWLEDGE</u></b>				
			<b>Declarative:</b>				
			Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, AMIRS displays/controls				
			<b>Situational:</b>				
			Tactical situation, aircraft altitude/speed, mission objectives/requirements, atmospheric conditions, terrain, time of day				

## OUTPUT/BEHAVIOUR

**Voice:** 0 Nonc

### Psychomotor: 11 Simple

**Memory:**

### External Influenced Variables

**Output Interface:** DDI, HOTAS, AMIRS

## INPUT/SENSATION

**Vision:** 11 Text, Dial Reading

**Audition:**

**Kinesthetic:**

1 1 Simple stimulus

**Memory:** 23 Spatially coded

### Internal Influenced Variables

**Input Interface:** AMIRS display on the left DDI

## COGNITIVE/PERCEPTUAL PROCESS

**Voice:** 0 None

### Psychomotor:

**Memory:** 5 Memorization

## COGNITIVE/PERCEPTUAL PROCESS

**Vision:** 3 Verbal encoding

**Audition:** 0 None

**Kinesthetic:** 1 Automatised, highly learned perception

**Memory:** 3 Spatial decoding



Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 7 2(b)	Goal:	that AMIRS contact on formation members is displayed and monitored by visually referencing the AMIRS display on the LEFT DDI			Goal ID:	7 2 7 2(b)	Source Goal:	7 2 7 2(b)
Description:									
To monitor AMIRS contact on formation members, the pilot will visually reference his AMIRS display on his left DDI. He will also adjust the settings on his AMIRS, using either HOTAS or manual pushbuttons, to allow him to maintain AMIRS contact on formation members									
Auditory Category:		0		None					
External Cue:				Not Applicable					
Cognitive Category:		5		Memorization/recall, calculation, estimation, deduction, reasoning, high level ops					
Initiating Conditions:		AMIRS contact with formation members is established							
Initiating Actions:		Left DDI is visually referenced for AMIRS contact information and current AMIRS parameters							
Ending Conditions:		AMIRS contact on formation members is no longer required							
Ending Actions:		Return AMIRS to assigned search parameters							

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0 None	<b>Voice:</b>	0 None
<b>Psychomotor:</b>	1 2 Difficult but familiar	<b>Psychomotor:</b>	4 Spatial encoding
<b>Memory:</b>	1 Commit to memory (LTM and STM)	<b>Memory:</b>	5 Memorization
<b>External Influenced Variables</b> AMIRS search and track modes, AMIRS search parameters			
<b>Output Interface:</b> DDI, HOTAS, AMIRS			
<b>INPUT/SENSATION</b>			
<b>Vision:</b>	1 2 Pattern, spatial relationship, tracking, graphic displays	<b>Vision:</b>	4 Spatial encoding, visual pattern recognition
<b>Audition:</b>	0 None	<b>Audition:</b>	0 None
<b>Kinesthetic:</b>	1 1 Simple stimulus	<b>Kinesthetic:</b>	1 Automated, highly learned perception
<b>Memory:</b>	2 4 Semantically coded	<b>Memory:</b>	3 Verbal decoding
<b>Internal Influenced Variables</b> Belief that AMIRS contact on other formation members is being maintained			
<b>Input Interface:</b> AMIRS display on left DDI correlated with other independent information (radar/visual/air-to-air tacan/Link-16/external agency/communications)			

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 7 3(a)	Goal:	that no visually unobserved bogeys/bandits are able to engage the formation	Goal ID:	7 2 7 3(a)	Source Goal:	7 2 7 3(a)	
<b>Description:</b> The pilot will maintain a methodical visual search pattern throughout the entire mission to ensure that no unobserved bogeys/bandits are able to engage his formation without being visually observed								
He accomplishes this by developing a scanning pattern that allows him to scan all of the airspace around his aircraft in a deliberate, sequential fashion. For example, he may start by observing his deep six o'clock position, then scan out the left side of the canopy until arriving at the 12 o'clock position. He will repeat the same process on the right side of the aircraft, then search the extreme vertical above and below his aircraft. This visual search pattern is then repeated throughout the mission								
<b>Auditory Category:</b>		0	None	<b>Operator:</b>		Pilot	<b>Completion Time:</b> 5	
<b>External Cue:</b>		Not Applicable			<b>Priority:</b>	9	<b>Allowable Delay (K):</b>	<b>Difficulty (D)</b>
<b>Cognitive Category:</b>		4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)	<b>Interruptable:</b>		No	<b>Sheddable:</b>	No
<b>Initiating Conditions:</b>		Tactical phase of mission begins. Operating in day, VMC flight conditions. Risk of bogeys/bandits operating in near proximity exists			<b>Resumable:</b>		Not Applicable	<b>Shed If Late:</b> Not Applicable
<b>Initiating Actions:</b>		Begin visual search and scan patterns			<b>Feeds Back to Higher Level Goal</b>		No	
<b>Ending Conditions:</b>		Tactical phase of mission ends. IMC flight conditions are encountered. Reaction to observed bogey/bandit is executed						
<b>Ending Actions:</b>		Stop visual search and scan patterns						
<b>KNOWLEDGE</b>								
<b>Declarative:</b>				Standard operating procedures, visual scan technique.				
<b>Situational:</b>				Mission objectives/requirements, tactical situation, environmental conditions				

<b>COGNITIVE/PERCEPTUAL PROCESS</b>			
<b>Voice:</b>	0	None	
<b>Psychomotor:</b>	1	Automatised, highly learned	
<b>Memory:</b>	5	Memorization	

<b>COGNITIVE/PERCEPTUAL PROCESS</b>			
<b>Vision:</b>	4	Spatial encoding, visual pattern recognition	
<b>Audition:</b>	0	None	
<b>Kinesthetic:</b>	0	None	
<b>Memory:</b>	3	Spatial decoding	

<b>INPUT/SENSATION</b>			
<b>Vision:</b>	1 2	Pattern, spatial relationship, tracking, graphic displays	
<b>Audition:</b>	0	None	
<b>Kinesthetic:</b>	0	None	
<b>Memory:</b>	2 3	Spatially coded	

<b>Internal Influenced Variables</b>		Belief that a visual search pattern is being maintained, and that no unobserved bogeys/bandits have been able to engage the formation
<b>Input Interface:</b>		Visual environment surrounding aircraft, correlation of other tactical information

CR 2001-072

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 7 3(f)	Goal:	that no visually unobserved bogeys/bandits are able to engage the formation at night	Goal ID:	7 2 7 3(f)	Source Goal:	7 2 7 3(f)
Description:							
The pilot will maintain an NVG visual search pattern throughout all phases of a night mission to ensure that no unobserved bogeys/bandits are able to engage his formation without being visually observed							
He accomplishes this by developing a scanning pattern that allows him to scan all of the airspace around his aircraft in a deliberate, sequential fashion. For example, he may start by observing his deep six o'clock position, then scan out the left side of the canopy until arriving at the 12 o'clock position. He will repeat the same process on the right side of the aircraft, then search the extreme vertical above and below his aircraft. This NVG visual search pattern is then repeated throughout the mission.							
Auditory Category: 0 None							
External Cue: Not Applicable							
Cognitive Category: 4 Spatial encoding, decoding, pattern recognition (reading maps, giving directions)							
Initiating Conditions: Tactical phase of mission begins. Operating in night, VMC flight conditions. Significant prob. Of bogeys/bandits operating in near proximity exists.							
Initiating Actions: Begin visual search and scan patterns with NVGs.							
Ending Conditions: Tactical phase of mission ends. IMC flight conditions are encountered. Reaction to observed bogey/bandit begins.							
Ending Actions: Stop visual search and scan patterns with NVGs.							
KNOWLEDGE							
Declarative: NVG operating procedures, standard operating procedures, visual scan technique with NVGs.							
Situational: Mission objectives/requirements, tactical situation, environmental conditions							

OUTPUT/BEHAVIOUR

<b>Voice:</b>	0	None
<b>Psychomotor:</b>	1 1	Simple
<b>Memory:</b>	1	Commit to memory (LTM and STM)
<b>External Influenced Variables</b>		NVG settings, cockpit lighting, extenor aircraft lighting
<b>Output Interface:</b>		NVGs

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None
Psychomotor:	1	Automatised, highly learned
Memory:	5	Memorization

INPUT/SENSATION

<b>Vision:</b>	1 2	Pattern, spatial relationship, tracking, graphic displays	<b>Vision:</b>	4	Spatial encoding, visual pattern recognition
<b>Audition:</b>	0	None	<b>Audition:</b>	0	None
<b>Kinesthetic:</b>	0	None	<b>Kinesthetic:</b>	0	None
<b>Memory:</b>	2 3	Spatially coded	<b>Memory:</b>	3	Spatial decoding
<b>Internal Influenced Variables</b>		Belief that an NVG visual search is being maintained, and that no unobserved bogeys/bandits have been able to engage the formation			
<b>Input Interface:</b>		NVG visible environment surrounding aircraft, correlation of other tactical information			

COGNITIVE/PERCEPTUAL PROCESS

Vision:	4	Spatial encoding, visual pattern recognition
Audition:	0	None
Kinesthetic:	0	None
Memory:	3	Spatial decoding

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 2 7 3(g)	Goal:	that visual contact of other formation members will be maintained using NVGs	Goal ID:	7 2 7 3(g)	Source Goal:	7 2 7 3(g)
<b>Description:</b> The NVG-equipped pilot will use normal visual cues to allow him to monitor and maintain visual contact with other formation members. In addition, he will use the discreet exterior lighting on other formation member's aircraft to facilitate the visual tracking of his formation aircraft							
<b>Auditory Category:</b> 0 None							
<b>External Cue:</b> Not Applicable							
<b>Cognitive Category:</b> 4 Spatial encoding, decoding, pattern recognition (reading maps, giving directions)							
<b>Initiating Conditions:</b> NVG contact with formation members is established using NVGs							
<b>Initiating Actions:</b> Visual cues (canopy codes, geographical reference, relative bearing) are used to maintain NVG contact on formation members							
<b>Ending Conditions:</b> NVG contact with formation members is no longer required or is lost							
<b>Ending Actions:</b> Visual cues used to maintain NVG contact on formation members are disregarded. Current mission tasks performed							
<b>Situational:</b> Mission objectives/requirements, tactical situation, environmental conditions							
<b>Declarative:</b> NVG operating procedures, standard operating procedures, visual scan technique with NVGs							
<b>Sheddable:</b> No							
<b>Shed If Late:</b> Not Applicable							
<b>Feeds Back to Higher Level Goal:</b> No							
<b>Completion Time:</b> 7							
<b>Allowable Delay (K):</b> <b>Difficulty (D)</b>							
<b>KNOWLEDGE</b>							

<b>COGNITIVE/PERCEPTUAL PROCESS</b>			
<b>Voice:</b>	0	None	
<b>Psychomotor:</b>	1	Automatised, highly learned	
<b>Memory:</b>	5	Memorization	
<b>External Influenced Variables</b> NVG settings, cockpit lighting, exterior aircraft lighting			
<b>Output Interface:</b> NVGs			

<b>INPUT/SENSATION</b>			
<b>Vision:</b>	1 2	Pattern, spatial relationship, tracking, graphic displays	
<b>Audition:</b>	0	None	
<b>Kinesthetic:</b>	0	None	
<b>Memory:</b>	2 3	Spatially coded	
<b>Internal Influenced Variables</b> Belief that NVG contact is being maintained on other formation members			
<b>Input Interface:</b> NVG visible environment surrounding aircraft, correlation of other tactical information (radar/visual/air-to-air tacan/Link-16/external agency/communications)			

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 2 2(a)	Goal:	that the FAC target description is received and confirmed	Goal ID:	7 3 2 2(a)	Source Goal:	7 3 2 2(a)
<b>Description:</b>							
The formation lead will normally ensure that the appropriate sensors are slaved to the target coordinates before the target description brief from the FAC begins. Once ready for the briefing, the FAC will describe the target to the pilots. Referring to the target area displayed on the DDIs, the pilots will confirm that the target described matches the image displayed to them							
Auditory Category:	4	Speech Input (primary task)		Operator:	Pilot	Completion Time:	120
External Cue:	Yes			Priority:	3	Allowable Delay (K):	Difficulty (D)
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops		Interruptable:	No	Sheddable:	No
Initiating Conditions:	Radio contact with FAC established. Within a specified range of the target. Sensors have clear LOS target, and are slaved to the target coordinates						
Initiating Actions:	FAC begins target description brief						
Ending Conditions:	Following briefing, formation members confirm that the target area displayed on their DDI matches the target area they have b						
Ending Actions:	Update target designations using HOTAS. Complete air-to-ground checks. Prepare for weapons delivery						
<b>Situational:</b>							
Significant features in target area, target specifics, relative sizes/distances between target and surrounding objects, terrain, environmental conditions							
<b>Declarative:</b>							
Aircraft operating procedures, standard operating procedures, CAS specific procedures and tactics, standard communications format, anticipation of IR/radar image of target and target area							
<u><b>KNOWLEDGE</b></u>							
<b>Feeds Back to Higher Level Goal</b>							
No							
<b>Resumable:</b>							
Not Applicable							
<b>Shed If Late:</b>							
Not Applicable							

OUTPUT/BEHAVIOUR

Voice:	1	Voice Output
Psychomotor:	1 1	Simple
Memory:	1	Commit to memory (LTM and STM)

External Influenced Variables

secure radio transmission using Have Quick II, observe sensor imagery displayed on DDIs, maps of target area

Output Interface: COMM 1/2, Have Quick II, HOTAS, DDIs, APG-73, AMIRS, LINK-16, EGI

INPUT/SENSATION

Vision:	1 2	Pattern, spatial relationship, tracking, graphic displays
Audition:	4	Auditory localisation
Kinesthetic:	0	None
Memory:	2 4	Semantically coded

Internal Influenced Variables

Belief that the target description has been received and understood from the FAC, and confirmed via the use of on board sensor imagery

Input Interface: Comparison of target description with target plot on maps, image of target displayed by on board systems, significant features in the target area, unique identifying target features

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7.3.2.2(b)	Goal:	that the target is accurately and correctly identified using aircraft sensors	Goal ID:	7 3 2 2(b)	Source Goal:	7 3 2 2(b)
<b>Description:</b> The primary sensors for target detection in the CF-18 are the radar and the AMIRS. The radar is used to find targets that are very radar reflective and/or when the weather conditions do not allow the AMIRS to provide an infrared image of the target. In nearly all other cases the AMIRS will be the sensor of choice for finding the target.  Prior to arriving in the target area, the pilot ensures that the target coordinates are entered correctly into the aircraft database. He also confirms the accuracy of his EGI system, and updates the system to improve navigation accuracy, if necessary.							
Auditory Category:	0	None	<div><div></div><div><b>KNOWLEDGE</b></div></div>				
External Cue:	Not Applicable						
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops					
Initiating Conditions:	Inside a specific range from target						
Target is within LOS of sensors							
Sensor parameters verified and set							
Initiating Actions:	NAV Designate target coordinates and slave appropriate sensor to the target designation		<div><div></div><div><b>KNOWLEDGE</b></div></div>				
Ending Conditions:	Target is acquired						
Ending Actions:	Pilot communicates with FAC that he has acquired target, and begins to maneuver to weapons release parameters						

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0	None	<b>Voice:</b>	0	None	
<b>Psychomotor:</b>	1	2	Difficult but familiar	<b>Psychomotor:</b>	4	Spatial encoding
<b>Memory:</b>	1	Commit to memory (LTM and STM)	<b>Memory:</b>	5	Memorization	
<b>External Influenced Variables</b> Radar/AMIRS parameters and settings, DDI brightness/contrast, HOTAS						
<b>Output Interface:</b> HOTAS, DDIs, HSD, HUD, APG-73, AMIRS, LINK-16, EGI						
<b><u>INPUT/SENSATION</u></b>						
<b>Vision:</b>	1	2	Pattern, spatial relationship, tracking, graphic displays	<b>Vision:</b>	4	Spatial encoding, visual pattern recognition
<b>Audition:</b>	0	None	<b>Audition:</b>	0	None	
<b>Kinesthetic:</b>	1	1	Simple stimulus	<b>Kinesthetic:</b>	1	Automatised, highly learned perception
<b>Memory:</b>	2	5	Complex operation	<b>Memory:</b>	5	Recall
<b>Internal Influenced Variables</b> Belief that the target has been located and positively identified using on board sensors						
<b>Input Interface:</b> Comparison of target displayed with target plot on maps, imagery, anticipated target representation, unique identifying target features						

## Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 2 2(d)	Goal:	that it is clearly communicated that the target has been acquired	Goal ID:	7 3 2 2(d)	Source Goal:	7 3 2 2(d)
Description:							
The pilot communicates that he has acquired the target using secure voice on Have Quick II and/or via Link 16							
Auditory Category:	5	Voice Output		Operator:	Pilot	Completion Time:	10
External Cue:	No			Priority:	4	Allowable Delay (K):	1 5
Cognitive Category:	3	Verbal encoding, decoding, speech production, listening		Interruptable:	Yes	Sheddable:	No
Initiating Conditions:	Target has been acquired			Resumable:	Yes	Shed If Late:	Not Applicable
Initiating Actions:	Begin transmitting to the FAC using Have Quick II			Feeds Back to Higher Level Goal			
Ending Conditions:	Communication with the FAC is complete	FAC is confident the proper target has been acquired		No			
Ending Actions:	Begin manoeuvring to weapons release parameters						
<p><b>KNOWLEDGE</b></p> <p><b>Declarative:</b> Aircraft operating procedures, standard operating procedures, standard communications format.</p> <p><b>Situational:</b> Tactical situation, quality/security of communications</p>							
<p><b>COGNITIVE/PERCEPTUAL PROCESS</b></p> <p><b>Voice:</b> 3 Speech production</p> <p><b>Psychomotor:</b> 1 Automatised, highly learned</p> <p><b>Memory:</b> 5 Memorization</p>							
<p><b>COGNITIVE/PERCEPTUAL PROCESS</b></p> <p><b>Vision:</b> 0 None</p> <p><b>Audition:</b> 5 Verbal decoding, speech recognition</p> <p><b>Kinesthetic:</b> 1 Automatised, highly learned perception</p> <p><b>Memory:</b> 1 Automatised</p>							
<p><b>INPUT/SENSATION</b></p> <p><b>Vision:</b> 0 None</p> <p><b>Audition:</b> 5 Speech input (attended to, salient to the primary task)</p> <p><b>Kinesthetic:</b> 1 1 Simple stimulus</p> <p><b>Memory:</b> 2 1 Accessible, familiar</p>							
<p><b>Internal Influenced Variables</b> Belief that it has been clearly communicated clearly to the FAC, that the target has been acquired, using Have Quick II/Link 16</p> <p><b>Input Interface:</b> FAC's acknowledgement of communication that the target has been acquired</p>							



Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 2 2(e)	Goal:	that the FAC receives a target and target area description from the pilot(s)	Goal ID:	7 3 2 2(e)	Source Goal:	7 3 2 2(e)
Description:	The pilot describes the target area and target to the FAC using Have Quick II. The description normally begins with an overview of where, from the pilot's perspective, the target lies relative to large geographic features nearby. The use of cardinal headings is used when describing objects location relative to one another in order to avoid confusion. The pilot then gives a detailed description of the target's appearance, location, and any unique identifying traits that give the FAC confidence the pilot has acquired the correct target. The FAC and pilot, still using Have Quick II, will normally confirm a few more details as a final confirmation that the proper target is about to be attacked.						
Auditory Category:	4	Speech Input (primary task)		Operator:	Pilot	Completion Time:	60
External Cue:	No			Priority:	3	Allowable Delay (K):	Difficulty (D)
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops		Interruptable:	No	Sheddable:	No
Initiating Conditions:	Target/target area is displayed on the DDI. Target has been acquired.						
Initiating Actions:	Begin transmitting to the FAC using Have Quick II.						
Ending Conditions:	Target/target area description is complete. FAC is confident the pilot has acquired the proper target.						
Ending Actions:	Begin to maneuver to weapons release parameters.						
Feeds Back to Higher Level Goal	No			Resumable:	Not Applicable	Shed If Late:	Not Applicable
Auditory Category:				KNOWLEDGE			
External Cue:				Declarative:			
Cognitive Category:				Standard operating procedures, standard communications format, sensor displayed target information.			
Initiating Conditions:				Situational:			
Initiating Actions:				Target specifics and description, target area layout, location of target relative to other significant objects in target area, environmental conditions, tactical situation, quality/security of communications.			

OUTPUT/BEHAVIOUR

Voice:	1	Voice Output
Psychomotor:	0	None
Memory:	1	Commit to memory (LTM and STM)

COGNITIVE/PERCEPTUAL PROCESS

Voice:	3	Speech production
Psychomotor:	0	None
Memory:	5	Memorization

External Influenced Variables: COMM 1/2 controls and/or Link 16, imagery displayed on DDIs by on board sensors

Output Interface: COMM 1/2, HOTAS, Have Quick II, DDIs, HSD, EGI, AMIRs

INPUT/SENSATION

Vision:	1 2	Pattern, spatial relationship, tracking, graphic displays
Audition:	5	Speech input (attended to, salient to the primary task)
Kinesthetic:	1 1	Simple stimulus
Memory:	2 5	Complex operation

COGNITIVE/PERCEPTUAL PROCESS

Vision:	4	Spatial encoding, visual pattern recognition
Audition:	5	Verbal decoding, speech recognition
Kinesthetic:	1	Automatised, highly learned perception
Memory:	5	Recall

Internal Influenced Variables: Belief that the target area and the target have been accurately described to the FAC using Have Quick II, and that the correct target is about to be attacked.

Input Interface: Target area/target match target plot on maps, target description from FAC. FAC is satisfied the correct target has been designated. All formation members agree that the correct target is the correct target.

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 2 2(h)	Goal:	that the target is visually acquired using NVGs	Goal ID:	7 3 2 2(h)	Source Goal:	7 3 2 2(h)
<b>Description:</b>							
Prior to arriving in the target area, the pilot ensures that the target coordinates are entered correctly into the aircraft database. He also confirms the accuracy of his EGI system, and performs an update to improve navigation accuracy, if necessary							
The NVG equipped pilot will find his target in much the same way a pilot finds his target visually during the daytime. This will involve performing some form of dive manoeuvre in order to visually acquire the target using his NVGs at night. Prior to performing the dive attack, the pilot normally nav designates the target. He then offsets the target to either the left or right and then, at a pre-calculated distance/altitude/speed, he executes the dive manoeuvre							
Auditory Category:	0	None					
External Cue:		Not Applicable					
Cognitive Category:	5	Memorization/recall, calculation, deduction, reasoning, high level ops					
Initiating Conditions:	VMC night conditions present	Within visual range/LOS of target	NVGs properly donned and adjusted				
<b>Initiating Actions:</b> Begun visual search of target area							
<b>Ending Conditions:</b> Target is acquired using NVGs							
<b>Ending Actions:</b> Update target designation and communicate the target has been acquired to the FAC using Have Quick II.							
<b>KNOWLEDGE</b>							
<b>Declarative:</b>							
NVG search pattern technique, pattern recognition, key features to find ground patterns visually							
<b>Situational:</b>							
Significant features in target area that help positively ID target, unique target features, target area environmental conditions and light conditions							

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0 None	<b>Voice:</b>	0 None
<b>Psychomotor:</b>	1 1 Simple	<b>Psychomotor:</b>	1 Automatised, highly learned
<b>Memory:</b>	1 Commit to memory (LTM and STM)	<b>Memory:</b>	5 Memorization
<b>External Influenced Variables</b>		NVG settings, cockpit lighting, exterior aircraft lighting	
<b>Output Interface:</b>		NVGs, EGI	

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

<b>Vision:</b>	1 2	Pattern, spatial relationship, tracking, graphic displays	<b>Vision:</b>	4	Spatial encoding, visual pattern recognition
<b>Audition:</b>	0	None	<b>Audition:</b>	0	None
<b>Kinesthetic:</b>	0	None	<b>Kinesthetic:</b>	0	None
<b>Memory:</b>	2 5	Complex operation	<b>Memory:</b>	5	Recall
<b>Internal Influenced Variables</b> Belief that the target has been located and positively identified using NVGs					
<b>Input Interface:</b> area surrounding target, target specifics, target layout					

## Annex I - CF18 Air to Ground PCT Goal Analysis Results

<b>IP Number</b>	7331(o)	<b>Goal:</b>	that the area surrounding the target and the target are found visually	<b>Goal ID:</b>	7331(o)	<b>Source Goal:</b>	7221(o)
<b>Description:</b>							
Anticipate what the target surrounding area look like by reviewing the target photos, Maps or data linked imagery visually or mentally. When reviewing the target, recognize how your run-in ground track will bring you into and over the target							
Look out and search for large features that help you to identify smaller features that lead your eyes to the Target							
Find DMPI							
<b>Auditory Category:</b>	0	None					
<b>External Cue:</b>		Not Applicable					
<b>Cognitive Category:</b>	4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)					
<b>Initiating Conditions:</b>	Specific range from the target, within line of sight, during pull up manoeuvre						
<b>Initiating Actions:</b>	Conduct visual search pattern						
<b>Ending Conditions:</b>	Target has been located						
<b>Ending Actions:</b>	Monitor Target position for Identification						
				<b>Declarative:</b>	Visual search pattern technique Pattern recognition, key features to find ground patterns visually		
				<b>Situational:</b>	Specific Target surrounding features (e.g. terrain, large features surrounding Target, smaller unique target features, weather, etc.)		
				<b>Feeds Back to Higher Level Goal</b>	No		
				<b>Resumable:</b>	Not Applicable	<b>Shed If Late:</b>	Not Applicable
				<b>Interruptable:</b>	No	<b>Sheddable:</b>	No
				<b>Priority:</b>	3	<b>Allowable Delay (K):</b>	<b>Difficulty (D)</b>
				<b>Operator:</b>	Pilot	<b>Completion Time:</b>	4
<b><u>KNOWLEDGE</u></b>							

## OUTPUT/BEHAVIOUR

**Voice:** 0 None

### Psychomotor: 11 Simple

**Memory:**

**External Influenced Variables**

**Output Interface:** None

## INPUT/SENSATION

**Vision:** 1 2 Pattern, spatial relationship, tracking, graphic displays

**Audition:**

**Kinesthetic.**

**Memory:** 2 3 Spatially coded

### Internal Influenced Variables

**Input Interface:** Surrounding Ground and target features

## COGNITIVE/PERCEPTUAL PROCESS

**Voice:** 0 None

**Psychomotor:** 1 Automatised, highly learned

## Memory: 5 Memorization

## COGNITIVE/PERCEPTUAL PROCESS

**Vision:** 4 Spatial encoding, visual pattern recognition

**Audition:** 0 None

**Kinesthetic:** 0 Nonc

### Memory: 3 Spatial decoding

**Initiating Actions:** Conduct visual search pattern

**Ending Conditions:** Target has been located

**Ending Actions:** Monitor Target position for Identification

**Situational:**

Specific Target surrounding features (e.g. terrain, large features surrounding Target, smaller unique target features, weather, etc.)

## KNOWLEDGE

**Declarative:**

Visual search pattern technique Pattern recognition, key features to find ground patterns visually

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 3 2(b)	Goal:	that the target is designated and that the steering information is available and displayed	Goal ID:	7 3 3 2(b)	Source Goal:	7 2 2 2(b)
Description:							
First NAV designate the Target position (or Offset aim point) With the TDC assigned to the desired display (Radar or the AMIRS), the designation is then adjusted by moving the TD diamond or the NAV stabilized cursor designation When satisfied that the designation is accurately on the Target (or Offset point) add O/S if required (Pre-programmed) by depressing the appropriate push button on the HSD Confirm that the Target W/pt, distance and heading are displayed in the HUD and that they are accurate							
Auditory Category:	0	None	Operator: Pilot				
External Cue:	Not Applicable		Priority: 4				
Cognitive Category:	1	Automatized, highly learned (easy to do for a trained person)	Allowable Delay (K): 1.6				
Initiating Conditions:	Desired Range from the target		Interruptable: Yes				
Initiating Actions:	Nav designate the target		Resumable: No				
Ending Conditions:	Target designation symbology is on the desired location for target area identification		Shed If Late: Not Applicable				
Ending Actions:	Keep target designation on the desired aim point		Feeds Back to Higher Level Goal				
			No				
<u>KNOWLEDGE</u>							
			Declarative:				
			Aircraft operating procedures Tactics. Standard Operating procedures. Designation procedures Sensor displays and symbology interpretation				
			Situational:				
			General target Area features Range and distance from target.				

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None	Voice:	0	None
Psychomotor:	1	1 Simple	Psychomotor:	1	Automatised, highly learned
Memory:	1	Commit to memory (LTM and STM)	Memory:	5	Memorization
External Influenced Variables	Target designation symbology				
Output Interface:	DDL,HUD				

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

Vision:	1	2 Pattern, spatial relationship, tracking, graphic displays	Vision:	4	Spatial encoding, visual pattern recognition
Audition:	0	None	Audition:	0	None
Kinesthetic:	0	None	Kinesthetic:	0	None
Memory:	2	3 Spatially coded	Memory:	3	Spatial decoding
Internal Influenced Variables	Belief that the target designation symbology displayed is on the desired location				
Input Interface:	Sensor display on DDI				

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 3 2(c)	Goal:	that the target area is identified with Aircraft Sensors	Goal ID:	7 3 3 2(c)	Source Goal:	7 2 2 2(c)
<b>Description:</b>							
Anticipate what the target surrounding area look like by reviewing the target photos, Maps or data linked imagery visually or mentally. When reviewing the target, recognize how your run-in ground track will bring you into and over the target Visually look at the displayed target Area picture and search for large features that help you to identify smaller features Identify target Area							
<b>Auditory Category:</b>		0	None	<b>Operator:</b>		Pilot	<b>Completion Time:</b> 10
<b>External Cue:</b>		4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)	<b>Priority:</b>		4	<b>Allowable Delay (K):</b> 1 5 <b>Difficulty (D)</b>
<b>Cognitive Category:</b>		4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)	<b>Interruptable:</b>		Yes	<b>Sheddable:</b> No
<b>Initiating Conditions:</b>		Target has been designated, at the calculated range where magnification provides enough details for area ID		<b>Resumable:</b>		No	<b>Shed If Late:</b> Not Applicable
<b>Initiating Actions:</b>		Look at target area on DDI		<b>Feeds Back to Higher Level Goal</b>		No	
<b>Ending Conditions:</b>		Target Area has been identified		<b>KNOWLEDGE</b>			
<b>Ending Actions:</b>		Monitor displayed target Area for target Identification		<b>Declarative:</b>			
				Aircraft operating procedures    Tactics    Standard Operating procedures    Sensor displays and symbology interpretation			
				<b>Situational:</b>			
				Specific target area features (e.g. terrain, large features surrounding target, weather, etc )			

OUTPUT/BEHAVIOUR

**Voice:** 0 None

**Psychomotor:** 0 None

**Memory:** 1 Commit to memory (LTM and STM)

**External Influenced Variables** None

**Output Interface:** DDI

INPUT/SENSATION

**Vision:** 1 2 Pattern, spatial relationship, tracking, graphic displays

**Audition:** 0 None

**Kinesthetic:** 0 None

**Memory:** 2 3 Spatially coded

**Internal Influenced Variables** Belief that the Area displayed on the DDI corresponds to the desired target surroundings

**Input Interface:** DDI

COGNITIVE/PERCEPTUAL PROCESS

**Voice:** 0 None

**Psychomotor:** 0 None

**Memory:** 5 Memorization

COGNITIVE/PERCEPTUAL PROCESS

**Vision:** 4 Spatial encoding, visual pattern recognition

**Audition:** 0 None

**Kinesthetic:** 0 None

**Memory:** 3 Spatial decoding

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 3 2(d)	Goal:	that the aircraft is in the desired position to release weapons	Goal ID:	7 3 3 2(d)	Source Goal:	7 2 2 1(d)
<b>Description:</b>							
Conduct attack type desired to get to optimal delivery parameters Level Attack, Curvilinear Attack, Pop Up Attack, Curvi Pop Attack, and Loft/Toss							
The pull up is generally done by applying 3 G, smoothly and rapidly raising the nose to the desired climb angle							
Adjust Power to achieve and maintain the desired IAS/TAS Anticipate the turn-in point and roll-in to the desired Dive angle by placing the Lift vector on the AOD (AIM Off Distance) Three G is normally used through the turn							
Anticipate Velocity vector approaching the AOD, and conduct an unloaded roll to wings level at the desired dive angle							
Adjust Power to achieve and maintain the desired IAS/TAS Adjust dive angle to the desired delivery angle and							
Auditory Category:	0	None					
External Cue:	Not Applicable						
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops					
Initiating Conditions:	Designated distance/time from the target						
Initiating Actions:	Manoeuvre aircraft towards a weapons release solution						
Ending Conditions:	Aircraft has achieved Weapons Delivery Parameters						
Ending Actions:	Maintain stable platform for weapons release						
<b><u>KNOWLEDGE</u></b>							
<b>Declarative:</b>							
Aircraft operating procedures Tactics Standard Operating procedures Applicable orders, regulations and plans							
<b>Situational:</b>							
Mission requirements and objectives Specifics of the tactical situation (e.g. threat/friendly forces, weather, terrain, etc.) Details of on-going or planned activities							

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0	None	<b>Voice:</b>	0	None	
<b>Psychomotor:</b>	1	2	Difficult but familiar	<b>Psychomotor:</b>	4	Spatial encoding
<b>Memory:</b>	1	Commit to memory (LTM and STM)	<b>Memory:</b>	5	Memorization	
<b>External Influenced Variables</b> Aircraft position, altitude, attitude, heading, speed and g						
<b>Output Interface:</b> Aircraft controls and throttles, HUD						
<b><u>INPUT/SENSATION</u></b>						
<b>Vision:</b>	2	Peripheral	<b>Vision:</b>	1	Automatised, highly learned perception	
<b>Audition:</b>	0	None	<b>Audition:</b>	0	None	
<b>Kinesthetic:</b>	1	1	Simple stimulus	<b>Kinesthetic:</b>	1	Automatised, highly learned perception
<b>Memory:</b>	2	5	Complex operation	<b>Memory:</b>	5	Recall
<b>Internal Influenced Variables</b> Belief that the aircraft displayed parameters have achieved desired Weapons release parameters						
<b>Input Interface:</b> HUD, Relative position to surrounding ground/terrain						

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 3 2(e)	Goal:	that the target is identified	Goal ID:	7 3 3 2(c)	Source Goal:	7 2 2 2(c)
<b>Description:</b>							
Anticipate what the target looks like by reviewing the target photos, Maps or data linked imagery visually or mentally When reviewing the target, recognize what the target image should look like on the displays.							
Adjust Sensors information displayed to optimize target resolution and recognition features Visually look at the target picture displayed on the Sensors tactical displays and search for large features that help you to identify smaller features Identify target							
<b>Auditory Category:</b> 0 None							
<b>External Cue:</b> Not Applicable							
<b>Cognitive Category:</b> 5 Memorization/recall, calculation, estimation, deduction, reasoning, high level ops							
<b>Initiating Conditions:</b> Target area has been identified on the Sensor display, at the calculated range where magnification provides enough details for target ID							
<b>Initiating Actions:</b> Look at the target image on the DDI							
<b>Ending Conditions:</b> Target is positively Identified							
<b>Ending Actions:</b> Monitor target features to further confirm ID							
<b>Declarative:</b> Aircraft operating procedures Tactics Standard Operating procedures Anticipation of target representation on display for conditions of the day Interpretation of Map/Imagery/Onboard Sensors and symbology/LINK 16							
<b>Situational:</b> Specific target features (e g terrain, large features surrounding target, smaller unique target features, weather, etc ) Target IR picture Surrounding IR picture Target Radar Picture Surrounding Radar picture							
<b>Completion Time:</b> 10							
<b>Allowable Delay (K):</b> 1 3							
<b>Difficulty (D):</b>							
<b>Interruptable:</b> Yes							
<b>Sheddable:</b> No							
<b>Resumable:</b> No							
<b>Shed If Late:</b> Not Applicable							
<b>Feeds Back to Higher Level Goal</b> No							
<b>KNOWLEDGE</b>							

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0	None	<b>Voice:</b>	0	None
<b>Psychomotor:</b>	1 1	Simple	<b>Psychomotor:</b>	1	Automatised, highly learned
<b>Memory:</b>	1	Commit to memory (LTM and STM)	<b>Memory:</b>	5	Memorization
<b>External Influenced Variables</b> None					
<b>Output Interface:</b> DDI, Maps, Photos					
<b>INPUT/SENSATION</b>					
<b>Vision:</b>	1 2	Pattern, spatial relationship, tracking, graphic displays	<b>Vision:</b>	4	Spatial encoding, visual pattern recognition
<b>Audition:</b>	0	None	<b>Audition:</b>	0	None
<b>Kinesthetic:</b>	0	None	<b>Kinesthetic:</b>	0	None
<b>Memory:</b>	2 3	Spatially coded	<b>Memory:</b>	3	Spatial decoding
<b>Internal Influenced Variables</b> Belief that the target displayed corresponds to the assigned target for attack					
<b>Input Interface:</b> DDI, Maps Photos					

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 3 2(f)	Goal:	that the weapons solution is validated for weapons release			
<b>Description:</b>						
Confirm visually on the HUD that all required delivery parameters have been attained for release. Ensure that the proper weapon is selected and that the TDC is assigned to the appropriate display for delivery. Confirm visually on the HUD that the Master ARM is in the ARM position. Visually confirm that the desired release symbology is displayed and is valid for release. Confirm that the displayed aim point is on the DMPI (Desired Mean Point of Impact)						
<b>Auditory Category:</b>		0	None			
<b>External Cue:</b>		Not Applicable				
<b>Cognitive Category:</b>		5	Memorization/recall, calculation, deduction, estimation, reasoning, high level ops			
<b>Initiating Conditions:</b>		Aircraft has achieved weapons release parameters and point of release is approaching				
<b>Initiating Actions:</b>		Visually confirm weapon solution				
<b>Ending Conditions:</b>		Weapons solution has been validated				
<b>Ending Actions:</b>		Monitor weapons solution				
<b>KNOWLEDGE</b>						
<b>Declarative:</b>		Aircraft operating procedures. Tactics. Standard Operating procedures. Weapons operating procedures				
<b>Situational:</b>		Mission requirements and objectives. Specifics of the tactical situation (e.g. threat/friendly forces, weather, terrain, etc.). Type of weapons delivered				
Goal ID:	7 3 3 2(f)	Source Goal:	7 2 2 1(g)			
<b>Operator:</b>	Pilot	<b>Completion Time:</b>	2			
<b>Priority:</b>	2	<b>Allowable Delay (K):</b>	1 2	<b>Difficulty (D):</b>		
<b>Interruptable:</b>	No	<b>Sheddable:</b>	No			
<b>Resumable:</b>	Not Applicable	<b>Shed If Late:</b>	Not Applicable			
<b>Feeds Back to Higher Level Goal</b>		No				

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None	Voice:	0	None
Psychomotor:	0	None	Psychomotor:	0	None
Memory:	1	Commit to memory (LTM and STM)	Memory:	5	Memorization
<b>External Influenced Variables</b>					
Weapons release symbology					
<b>Output Interface:</b>					
HUD and Master Arm switch					

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

Vision:	1 1	Text, Dial Reading	Vision:	3	Verbal encoding
Audition:	0	None	Audition:	0	None
Kinesthetic:	0	None	Kinesthetic:	0	None
Memory:	2 4	Semantically coded	Memory:	3	Verbal decoding
<b>Internal Influenced Variables</b>					
Belief that the weapons solution displayed is valid for weapons release					
<b>Input Interface:</b>					
HUD					



Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 3 2(g)	Goal:	that the PGM weapons are delivered	Goal ID:	7 3 3 2(g)	Source Goal:	7 2 2 2(g)
<b>Description:</b> Depress and hold the weapons release button (Pickle button) on the stick Confirm that the PGM weapons are being released Once all weapons have been released, release Pickle button Confirm weapons release on the SMS page on the DDI							
<b>Auditory Category:</b>		0	None	<b>Operator:</b>	Pilot	<b>Completion Time:</b>	5
<b>External Cue:</b>			Not Applicable	<b>Priority:</b>	2	<b>Allowable Delay (K):</b>	1 2
<b>Cognitive Category:</b>		1	Automatized, highly learned (easy to do for a trained person)	<b>Interruptable:</b>	No	<b>Sheddable:</b>	No
<b>Initiating Conditions:</b>		Weapons solution validated and at the release altitude and or range		<b>Resumable:</b>	Not Applicable	<b>Shed If Late:</b>	Not Applicable
<b>Initiating Actions:</b>		Monitor displayed release symbology		<b>Feeds Back to Higher Level Goal</b>	No	<u><b>KNOWLEDGE</b></u>	
<b>Ending Conditions:</b>		Weapons have been released		<b>Declarative:</b>		Aircraft operating procedures Tactics Standard Operating procedures Weapons operating procedures	
<b>Ending Actions:</b>		Stop attending to goal		<b>Situational:</b>		Type of weapon released, weather conditions, visibility, winds, sun, terrain, target type	

OUTPUT/BEHAVIOUR

**Voice:** 0 None  
**Psychomotor:** 1 1 Simple  
**Memory:** 1 Commit to memory (LTM and STM)

**External Influenced Variables** Weapon release from aircraft , Pickle button depression, Weapons release symbology  
**Output Interface:** HUD, DDI, HOTAS, Pickle button

COGNITIVE/PERCEPTUAL PROCESS

**Voice:** 0 None  
**Psychomotor:** 1 Automatized, highly learned  
**Memory:** 5 Memorization

INPUT/SENSATION

**Vision:** 1 2 Pattern, spatial relationship, tracking, graphic displays  
**Audition:** 1 Tone or simple auditory signal  
**Kinesthetic:** 1 1 Simple stimulus  
**Memory:** 2 4 Semantically coded

**Internal Influenced Variables** Belief that the weapons have been delivered and that the symbology displays that fact  
**Input Interface:** HUD, DDI, Aircraft movement at weapons release,

COGNITIVE/PERCEPTUAL PROCESS

**Vision:** 4 Spatial encoding, visual pattern recognition  
**Audition:** 1 Automatized, highly learned perception  
**Kinesthetic:** 1 Automatized, highly learned perception  
**Memory:** 3 Verbal decoding

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 3 2(h)	Goal:	that the self-lasing LGB delivery is conducted safely and effectively	Goal ID:	7 3 3 2(h)	Source Goal:	7 2 2 2(h)
<b>Description:</b> Once PGM weapon is released, ensure that the Laser is armed and ready to fire For auto delivery, confirm that the laser is being fired at the target at the appropriate times. Monitor LGB impact For continuous lasing delivery, enable the trigger option by depressing the appropriate pushbutton on the AMIRS display Fire the laser manually after bomb release by depressing the trigger on the control stick Monitor LGB impact Once weapon has impacted the target, release the trigger							
Auditory Category:	0	None	<u>KNOWLEDGE</u>  <b>Declarative:</b> Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, target/target area information, weapon/eering information  <b>Situational:</b> weather conditions, visibility, winds, sun, terrain, target type				
External Cue:	Not Applicable						
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops					
Initiating Conditions:	Weapons delivery parameters have been satisfied						
Initiating Actions:	Weapons are released						
Ending Conditions:	Weapons delivery is completed.						
Ending Actions:	Stop attending to task						
<u>OUTPUT/BEHAVIOUR</u>							
Voice:	0	None	Voice:	0	None		
Psychomotor:	1 3	Complex and or unfamiliar	Psychomotor:	5	Memorization/rcall, calculation, estimation, deduction, reasoning		
Memory:	1	Commit to memory (LTM and STM)	Memory:	5	Memorization		
External Influenced Variables AMIRS designation Laser code Weapons release parameters Attack axis							
Output Interface: HOTAS HUD AMIRS/Laser controls/displays							
<u>INPUT/SENSATION</u>							
Vision:	1 2	Pattern, spatial relationship, tracking, graphic displays	Vision:	4	Spatial encoding, visual pattern recognition		
Audition:	0	None	Audition:	0	None		
Kinesthetic:	1 1	Simple stimulus	Kinesthetic:	1	Automatised, highly learned perception		
Memory:	2 4	Semantically coded	Memory:	3	Verbal decoding		
Internal Influenced Variables Belief that the self-lasing LGB delivery has been effectively conducted							
Input Interface: AMIRS display, visual/NVG cues							

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 3 2(j)	Goal:	that the target designation symbology is on the desired target aim point	Goal ID:	7 3 3 2(j)	Source Goal:	7 2 2 2(j)
Description:							
Adjust and update target designation on the desired aim point by moving the TDC. If required, turn the aircraft to the right to ensure constant field of view to the target							
		Operator:	Pilot			Completion Time:	40
		Priority:	3			Allowable Delay (K):	Difficulty (D)
		Interruptable:	No			Sheddable:	No
		Resumable:	Not Applicable			Shed If Late:	Not Applicable
		Feeds Back to Higher Level Goal				No	
Auditory Category:		0 None					
External Cue:		Not Applicable					
Cognitive Category:		4 Spatial encoding, decoding, pattern recognition (reading maps, giving directions)					
Initiating Conditions:		Target designation has move off the desired Aim point, or LGB has been released and is guiding to target					
Initiating Actions:		Depress and move the TDC					
Ending Conditions:		Designation has been kept on the desired aim point and/or weapons impact					
Ending Actions:		Monitor target designation					

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 3 2(k)	Goal:	that the Aircraft is recovered safely and misses the ground by the desired altitude	Goal ID:	7 3 3 2(k)	Source Goal:	7 2 2 1(i)
Description:							
At the appropriate recovery altitude or when pull-up cue / breakaway X is displayed in the HUD, the pilot must achieve a 4-G pull-up manoeuvre within 1.5 seconds and hold the 4-G throughout the pullout until desired climb angle is achieved to meet the clearance criteria    Adjust throttles to achieved and maintain desired recovery airspeed    Cross check Baro or Radar altitude during recovery to ensure minimum altitude is not broken    Increase G if required							
Auditory Category:	0	None		Operator:	Pilot	Completion Time:	15
External Cue:		Not Applicable		Priority:	1	Allowable Delay (K):	Difficulty (D)
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops		Interruptable:	No	Sheddable:	No
Initiating Conditions:	Weapons release is completed and/or aircraft at minimum recovery altitude, whichever comes first						
Initiating Actions:	Safe escape dive recovery initiated by pull up manoeuvre						
Ending Conditions:	Aircraft is at a safe altitude from the ground in the desired climbing attitude						
Ending Actions:	Stop attending to goal						
<u>KNOWLEDGE</u>							
Declarative:	Aircraft operating procedures    Tactics    Standard Operating procedures    Recovery/pull up symbology						
Situational:	Minimum recovery altitude, terrain, slope, weather, visibility						

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 3 2(l)	Goal:	that BDA is conducted	Goal ID:	7 3 3 2(l)	Source Goal:	7 2 2 1(k)
<b>Description:</b>							
After ensuring that Aircraft is safely recovered from delivery, if desired the target BDA can be conducted by assessing Bomb impact point and damage resulting from hit Visually assess the AMIRS display							
Auditory Category:		0	None	Operator:	Pilot	Completion Time:	5
External Cue:		Not Applicable		Priority:	8	Allowable Delay (K):	Difficulty (D)
Cognitive Category:		4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)	Interruptable:	Yes	Sheddable:	Yes
Initiating Conditions:		Aircraft is safely recovered from attack and weapon has impacted the target		Resumable:	No	Shed If Late:	No
Initiating Actions:		Look at DDI		Feeds Back to Higher Level Goal		No	
Ending Conditions:		Target BDA is complete		<u>KNOWLEDGE</u>			
Ending Actions:		Memorize target BDA		Declarative:		Assessment of target battle damage on IR display Weapons effects	
Initiating Actions:		Look at DDI		Situational:		Target type and size, Weapons type, Weapons impact angle, weather, distance, AMIRS magnification	

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None	Voice:	0	None
Psychomotor:	0	None	Psychomotor:	0	None
Memory:	1	Commit to memory (LTM and STM)	Memory:	5	Memorization

External Influenced Variables    None

Output Interface:    DDI, AMIRS display

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

Vision:	1 2	Pattern, spatial relationship, tracking, graphic displays	Vision:	4	Spatial encoding, visual pattern recognition
Audition:	0	None	Audition:	0	None
Kinesthetic:	0	None	Kinesthetic:	0	None
Memory:	2 3	Spatially coded	Memory:	3	Spatial decoding

Internal Influenced Variables    Belief that the target battle damage has been assessed

Input Interface:    DDI, AMIRS display

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 4 1(b)	Goal:	that the pilot confirms the position of the formation by visually referencing his Link 16 display on the HSD	Goal ID:	7 3 4 1(b)	Source Goal:	7 1 1 3(d)
<b>Description:</b> Adjust and/or confirm LINK 16/MIDS Tactical Display parameters to ensure the desired airspace is covered Reduce range scale to ensure clarity of displayed information. Observe picture being built on the LINK 16/MIDS Tactical Display. Visually confirm position of Formation members by analyzing displayed information. Mentally build formation position and situational awareness							
Auditory Category:	0	None		Operator:	Pilot	Completion Time:	
External Cue:		Not Applicable		Priority:	4	Allowable Delay (K):	1 75
Cognitive Category:	1	Automatized, highly learned (easy to do for a trained person)		Interruptable:	Yes	Sheddable:	No
Initiating Conditions:		Tactical phase of mission begins		Resumable:	Yes	Shed If Late:	Not Applicable
Initiating Actions:		Visually reference Link 16 tactical display on HSD		Feeds Back to Higher Level Goal	No		
Ending Conditions:		Tactical phase of mission ends					
Ending Actions:		Stop visually referencing Link 16 tactical display on HSD					
<b><u>KNOWLEDGE</u></b>							
<b>Declarative:</b> Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, Link 16 displays/controls							
<b>Situational:</b> Tactical situation, phase of mission, mission objectives/requirements, correlation of displayed information with information displayed from other sources							

**OUTPUT/BEHAVIOUR**

Voice:	0	None
Psychomotor:	1 1	Simple
Memory:	1	Commit to memory (LTM and STM)
External Influenced Variables	HSD settings/controls	Link 16 settings/controls
Output Interface:	HOTAS	HSD Link-16

**COGNITIVE/PERCEPTUAL PROCESS**

Voice:	0	None
Psychomotor:	1	Automatized, highly learned
Memory:	5	Memorization

**INPUT/SENSATION**

Vision:	1 2	Pattern, spatial relationship, tracking, graphic displays
Audition:	0	None
Kinesthetic:	0	None
Memory:	2 3	Spatially coded

**COGNITIVE/PERCEPTUAL PROCESS**

Vision:	4	Spatial encoding, visual pattern recognition
Audition:	0	None
Kinesthetic:	0	None
Memory:	3	Spatial decoding

**Internal Influenced Variables** Belief that the formation position has been confirmed on Link 16 tactical display

**Input Interface:** HSD, Link 16 Display/Controls

## Annex I - CF18 Air to Ground PCT Goal Analysis Results

<b>IP Number</b>	7 3 4 1(c)	<b>Goal:</b>	that the post-attack formation join-up is completed safely and expeditiously	<b>Goal ID:</b>	7 3 4 1(c)	<b>Source Goal:</b>	7 1 1 3(c)
<b>Description:</b> Formation Join-up is performed by using a combination of a visual overtake and cut-off angle The cut-off angle is maintained by varying bank angle as the aircraft is moving up the reference line The geometry of the rejoins is such that an increase in speed will require a decrease in bank to maintain the cut-off angle and vice versa Radar lock-on may be used to assist The Vc is monitored on the HUD and represent your true closure (both longitudinal and lateral) Establish a crosscheck between speed, bank angle and the reference line The closure is then reduced as the desired formation position is attained To rejoin in close formation, the aircraft is moved to one side about 2-3 aircraft widths and about 50 feet low 50 to							
<b>Auditory Category:</b>	0	<b>None</b>		<b>Operator:</b>	Pilot	<b>Completion Time:</b>	
<b>External Cue:</b>		<b>Not Applicable</b>		<b>Priority:</b>	3	<b>Allowable Delay (K):</b>	1 5
<b>Cognitive Category:</b>	5	<b>Memorization/recall, calculation, estimation, deduction, reasoning, high level ops</b>		<b>Interruptible:</b>	No	<b>Sheddable:</b>	No
<b>Initiating Conditions:</b>	Individual attacks have been completed Formation join-up is required			<b>Resumable:</b>	Not Applicable	<b>Shed If Late:</b>	Not Applicable
<b>Initiating Actions:</b>	Formation members begin to manoeuvre IAW the pre-planned join-up procedure			<b>Feeds Back to Higher Level Goal</b>	No		
<b>Ending Conditions:</b>	Desired tactical formation is established						
<b>Ending Actions:</b>	Desired tactical formation is maintained						
				<b><u>KNOWLEDGE</u></b>			
				<b>Declarative:</b>			
				Standard operating procedures, aircraft controls and throttles, mission briefing			
				<b>Situational:</b>			
				Environmental conditions, relative formation following attack phase, surface-to-air and air-to-air threats in near proximity, timing/routing constants			

## OUTPUT/BEHAVIOUR

**Voice:** 0 None

**Psychomotor:** 13 Complex and or unfamiliar

**Memory:** 1 Commit to memory (LTM and STM)

**External Influenced Variables** Aircraft position, altitude, attitude, heading, speed and g Radar/AMIRS parameters

**Output Interface:** Aircraft controls and throttles    HUD    Sensor displays

## INPUT/SENSATION

**Vision:** 1 2 Pattern, spatial relationship, tracking, tracking, graphic displays

**Audition:**

**Kinesthetic:**

**Memory:** 24 Semantically coded

**Internal Influenced Variables** Belief that the formation join-up has been conducted

**Input Interface:** Visual cues Sensor information (AMIRS/Radar) Link 16

## COGNITIVE/PERCEPTUAL PROCESS

**Voice:** 0 None

**Psychomotor:**  
5 Memorization/recall, calculation, estimation, deduction, reasoning

## Memory: 5 Memorization

## COGNITIVE/PERCEPTUAL PROCESS

**Vision:** 4 Spatial encoding, visual pattern recognition

**Audition:** 0 Nonc

**Kinesthetic:** 4 Spatial encoding

**Memory:** 3 Verbal decoding

**Initiating Actions:** Formation members begin to maneuver toward the pre-planned join-up procedure

**Ending Conditions:** Desired tactical formation is established

**Ending Actions:** Desired tactical formation is maintained

**Situational:**

Environmental conditions, relative formation following attack phase, surface-to-air and air-to-air threats in near proximity, timing/routing constants

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 4 1(c)	Goal:	that visual contact with other formation members is established using NVGs	Goal ID:	7 3 4 1(c)	Source Goal:	7 1 1 2(h)
<b>Description:</b> From SA built with Aircraft sensors and LINK 16/MIDS, look in the estimated bearing and range of the mission elements. Start a visual search pattern at the estimated location of the contacts. Find mission elements visually with NVG							
				Operator:	Pilot	Completion Time:	
				Priority:	4	Allowable Delay (K):	1 5
				Interruptable:		Sheddable:	No
				Resumable:	Not Applicable	Shed If Late:	Not Applicable
				Feeds Back to Higher Level Goal	No		
				<u>KNOWLEDGE</u>			
				<b>Declarative:</b> Visual/NVG scan techniques, standard operating procedures, NVG operating procedures			
				<b>Situational:</b> Environmental conditions, tactical situation, mission objectives/requirements			

OUTPUT/BEHAVIOUR

Voice:	0 None	Voice:	0 None
Psychomotor:	1 1 Simple	Psychomotor:	1 Automatised, highly learned
Memory:	1 Commit to memory (LTM and STM)	Memory:	5 Memorization
External Influenced Variables	None		
Output Interface:	NVGs		

INPUT/SENSATION

Vision:	1 2 Pattern, spatial relationship, tracking, graphic displays	Vision:	4 Spatial encoding, visual pattern recognition
Audition:	0 None	Audition:	0 None
Kinesthetic:	0 None	Kinesthetic:	0 None
Memory:	2 3 Spatially coded	Memory:	3 Spatial decoding
Internal Influenced Variables	Belief that NVG contact has been established with other formation members		
Input Interface:	NVG visual cues		



Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7.3 4 2(f)	Goal:	that the formation successfully adjusts to medium/high altitude during the egress	Goal ID:	7 3 4 2(f)	Source Goal:	7 2 1 1(c)
Description:							
Establish in a climb/descent while maintaining required ground speed		Cross check altitude by visually confirming					
Barometric Altitude in the HUD		Level Off at the desired altitude		Cross check that the chosen altitude is at least		0 1	
1000' above or below TLs							
				Operator:	Pilot	Completion Time:	
				Priority:	6	Allowable Delay (K):	1.5
				Interruptable:	Yes	Sheddable:	No
				Resumable:	Yes	Shed If Late:	Not Applicable
				Feeds Back to Higher Level Goal	No		
KNOWLEDGE							
				Declarative:	Aircraft operating instructions, standard operating procedures, tactics, formation keeping procedures		
				Situational:	Tactical scenario, mission objectives/requirements, environmental conditions		
				Initiating Actions:	Desired tactical formation is maintained		
				Ending Conditions:	Egress phase of mission ends		
				Ending Actions:	Descent to lower altitude begins		

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 6 1(a)	Goal:	that the tactical roles are established in the formation	Goal ID:	7 3 6 1(a)	Source Goal:	7 2 5 1(a)					
Description:												
Individual responsibilities in addition to lookout are												
Lead terrain avoidance, navigation, tactical control of the formation, mission leader and bombs on target,												
Number three terrain avoidance, back-up navigation, element position keeping, tactical control of number four, deputy mission and tactical lead and bombs on target,												
Wingmen terrain avoidance, position keeping, lookout, bombs on target and monitor sensors												
Auditory Category:	0	None										
External Cue:	Not Applicable											
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops										
Initiating Conditions:	Ingress is initiated											
Initiating Actions:	Attend to individual responsibilities											
Ending Conditions:	Tactical roles have been established.											
Ending Actions:	Continue attending to individual responsibilities											
<u>KNOWLEDGE</u>												
Declarative:	Tactics Standard Operating procedures Applicable orders, regulations and plans Formation responsibilities											
Situational:	Position in the formation, threat, mission											

Operator: Pilot  
Priority: 6 Allowable Delay (K): Completion Time: 999  
Interruptable: Yes Difficulty (D) 0 4  
Resumable: No Sheddable: No  
Shed If Late: Not Applicable  
Feeds Back to Higher Level Goal No

KNOWLEDGE

Declarative:  
Tactics Standard Operating procedures Applicable orders, regulations and plans Formation responsibilities

Situational:  
Position in the formation, threat, mission

COGNITIVE/PERCEPTUAL PROCESS

Voice: 3 Speech production  
Psychomotor: 4 Spatial encoding  
Memory: 5 Memorization

COGNITIVE/PERCEPTUAL PROCESS

Vision: 1 Automatised, highly learned perception  
Audition: 5 Verbal decoding, speech recognition  
Kinesthetic: 1 Automatised, highly learned perception  
Memory: 5 Recall

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 6 1(b)	Goal:	that aircraft control and flight position are maintained	Goal ID:	7 3 6 1(b)	Source Goal:	7 2 5 1(b)
Description:	Maintain aircraft control and position by adjusting Power, Aircraft pitch and roll to obtain desired Airspeed and Flight Path. Adjust Flight position by using airspeed or geometry						
		Auditory Category:	0 None	Operator:	Pilot	Completion Time:	999
		External Cue:	Not Applicable	Priority:	6	Allowable Delay (K):	Difficulty (D) 0 2
		Cognitive Category:	5 Memorization/recall, calculation, estimation, deduction, reasoning, high level ops	Interruptable:		Sheddable:	No
		Initiating Conditions:	Domestic portion completed, tactical portion initiated	Resumable:	No	Shed If Late:	Not Applicable
				Feeds Back to Higher Level Goal	No		
				<u>KNOWLEDGE</u>			
				Declarative:	Aircraft operating procedures Tactics Standard Operating procedures Applicable orders, regulations and plans		
				Situational:	Mission requirements and objectives Specifics of the tactical situation (e g threat/friendly forces, weather, terrain, etc ) Details of on-going or planned activities		

## Annex I - CF18 Air to Ground PCT Goal Analysis Results

<b>IP Number</b> 7 3 6 1(d)	<b>Goal:</b> that the pilot confirms the position of the formation by visually referencing his Link 16 display on the HSD	<b>Goal ID:</b> 7 3 6 1(d)	<b>Source Goal:</b> 7 1 3(d)
<b>Description:</b> Adjust and/or confirm LINK 16/MIDS Tactical Display parameters to ensure the desired airspace is covered Reduce range scale to ensure clarity of displayed information Observe picture being built on the LINK 16/MIDS Tactical Display Visually confirm position of Formation members by analyzing displayed information Mentally build formation position and situational awareness			
<b>Auditory Category:</b> 0 None		<b>Operator:</b> Pilot	<b>Completion Time:</b>
<b>External Cue:</b> Not Applicable		<b>Priority:</b> 4	<b>Allowable Delay (K):</b> 1 75 <b>Difficulty (D)</b>
<b>Cognitive Category:</b> 1 Automated, highly learned (easy to do for a trained person)		<b>Interruptable:</b> Yes	<b>Sheddable:</b> No
<b>Initiating Conditions:</b> Tactical phase of mission begins		<b>Resumable:</b> Yes	<b>Shed If Late:</b> Not Applicable
		<b>Feeds Back to Higher Level Goal</b> No	
<b><u>KNOWLEDGE</u></b>			
<b>Declarative:</b> Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, Link 16 displays/controls			
<b>Situational:</b> Tactical situation, phase of mission, mission objectives/requirements, correlation of displayed information with information displayed from other sources			
<b><u>OUTPUT/BEHAVIOUR</u></b>			
<b>Voice:</b> 0 None		<b>Voice:</b> 0 None	
<b>Psychomotor:</b> 1 1 Simple		<b>Psychomotor:</b> 1 Automated, highly learned	
<b>Memory:</b> 1 Commit to memory (LTM and STM)		<b>Memory:</b> 5 Memorization	
<b>External Influenced Variables</b> HSD settings/controls Link 16 settings/controls			
<b>Output Interface:</b> HOTAS HSD Link-16			
<b><u>INPUT/SENSATION</u></b>			
<b>Vision:</b> 1 2 Pattern, spatial relationship, tracking, graphic displays		<b>Vision:</b> 4 Spatial encoding, visual pattern recognition	
<b>Audition:</b> 0 None		<b>Audition:</b> 0 None	
<b>Kinesthetic:</b> 0 None		<b>Kinesthetic:</b> 0 None	
<b>Memory:</b> 2 3 Spatially coded		<b>Memory:</b> 3 Spatial decoding	
<b>Internal Influenced Variables</b> Belief that the formation position has been confirmed on Link 16 tactical display			
<b>Input Interface:</b> HSD, Link 16 Display/Controls			

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 6 2(a)	Goal:	that the ideal tactical formation is selected and flown	Goal ID:	7 3 6 2(a)	Source Goal:	7 2 5 2(a)
<b>Description:</b> The lead will select the optimal formation for the tactical situation and direct his formation members to adopt formation Wingmen will position their aircraft to optimize formation at the desired range and altitude delta from their lead							
Auditory Category:	5	Voice Output					
External Cue:	No						
Cognitive Category:	4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)					
Initiating Conditions:	The overall tactical situation has changed						
Initiating Actions:	Lead selects and directs new appropriate formation Wingmen initiate manoeuvres to achieve formation						
Ending Conditions:	Correct formation is achieved						
Ending Actions:	Correct formation is maintained						
<b>Situational:</b> Mission requirements and objectives    Specifics of the tactical situation (e g threat/friendly forces, weather, terrain, etc )							
<b>Declarative:</b> Tactics Standard Operating procedures Applicable orders, regulations and plans							
<b><u>KNOWLEDGE</u></b>							
<b>Feeds Back to Higher Level Goal</b> No							
<b>Resumable:</b> Not Applicable							
<b>Interruptable:</b> No							
<b>Priority:</b> 4 <b>Allowable Delay (K):</b> 1 5 <b>Difficulty (D)</b> 0 2							
<b>Operator:</b> Pilot <b>Completion Time:</b> 999							
<b>Sheddable:</b> No							
<b>Shed If Late:</b> Not Applicable							

OUTPUT/BEHAVIOUR

Voice: 1 Voice Output

Psychomotor: 1 2 Difficult but familiar

Memory: 1 Commit to memory (LTM and STM)

External Influenced Variables All aircraft's positions, altitudes, attitudes, headings, speeds and g Aircraft's relative positions (formation)

Output Interface: Aircraft controls and throttles Aircraft displays (HUD,DDI,HSD)

INPUT/SENSATION

Vision: 1 2 Pattern, spatial relationship, tracking, graphic displays

Audition: 5 Speech input (attended to, salient to the primary task)

Kinesthetic: 0 None

Memory: 2 3 Spatially coded

Internal Influenced Variables Lead's belief that present formation is ideal for present tactical situation

Input Interface: Outside view Radar Link 16/MIDS display (for tactical picture) HUD, DDI

COGNITIVE/PERCEPTUAL PROCESS

Voice: 3 Speech production

Psychomotor: 4 Spatial encoding

Memory: 5 Memorization

COGNITIVE/PERCEPTUAL PROCESS

Vision: 4 Spatial encoding, visual pattern recognition

Audition: 5 Verbal decoding, speech recognition

Kinesthetic: 0 None

Memory: 3 Spatial decoding

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 6 2(c)	Goal:	that awareness and good positioning is maintained on other formation members and/or formation elements using non visual methods	Goal ID:	7 3 6 2(c)	Source Goal:	7 2 5 2(c)
<b>Description:</b> Positional mutual support is maintained by keeping SA on formation members position utilizing sensors and data link. Remain within sensor and weapons range to support formation members							
				Operator:	Pilot	Completion Time:	999
				Priority:	4	Allowable Delay (K):	1 5
				Interruptable:		Difficulty (D)	
				Resumable:	Not Applicable	Sheddable:	No
				Feeds Back to Higher Level Goal	No	Shed If Late:	Not Applicable
<b>Auditory Category:</b> 2 Speech Input (in background)							
<b>External Cue:</b>				No			
<b>Cognitive Category:</b> 5 Memorization/recall, calculation, deduction, estimation, reasoning, high level ops							
<b>Initiating Conditions:</b> Change in tactical environment with respect to beyond visual range formation members or other elements							
<b>Initiating Actions:</b> Sensors and or datalink are checked to build updated tactical awareness of BVR friendlys and manoeuvres are initiated to maintain							
<b>Ending Conditions:</b> Appropriate tactical BVR formation is achieved							
<b>Ending Actions:</b> Appropriate tactical BVR formation is maintained							
<b><u>KNOWLEDGE</u></b>							
				<b>Declarative:</b>	Tactics. Applicable orders, regulations and plans. Standard Operating Procedures. Sensor displays and symbology interpretation		
				<b>Situational:</b>	Mission Plan. Specifics of the tactical situation (e.g. threat/friendly forces, weather, terrain, etc.)		

<u>OUTPUT/BEHAVIOUR</u>		<u>COGNITIVE/PERCEPTUAL PROCESS</u>	
Voice:	1 Voice Output	Voice:	3 Speech production
Psychomotor:	0 None	Psychomotor:	0 None
Memory:	1 Commit to memory (LTM and STM)	Memory:	5 Memorization
External Influenced Variables		None	
Output Interface:		Aircraft controls and throttles. Aircraft displays (HUD, DDI, HSD). Radar. AMIRS	
<u>INPUT/SENSATION</u>		<u>COGNITIVE/PERCEPTUAL PROCESS</u>	
Vision:	1 2 Pattern, spatial relationship, tracking, graphic displays	Vision:	4 Spatial encoding, visual pattern recognition
Audition:	5 Speech input (attended to, salient to the primary task)	Audition:	5 Verbal decoding, speech recognition
Kinesthetic:	0 None	Kinesthetic:	0 None
Memory:	2 4 Semantically coded	Memory:	3 Verbal decoding
Internal Influenced Variables		Perception that all formation elements are in position to give mutual support	
Input Interface:		Radar. AMIRS. Link 16/MIDS display (for tactical picture). HUD, DDI	

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 6 2(c)	Goal:	that all aspects of a proper NVG visual lookout are conducted, including maintaining NVG visual contact with other formation members				Goal ID:	7 3 6 2(e)	Source Goal:	7 2 5 2(e)
Description:										
Maintain visual mutual support by maintaining sight with NVG of formation members while establishing visual lookout										
Conduct visual lookout responsibilities										
Auditory Category:										
0 None										
External Cue:										
Not Applicable										
Cognitive Category:										
2 Passive monitoring of speech/auditory signals										
Initiating Conditions:										
Night VMC flying conditions in a tactical arena										
Initiating Actions:										
All formation members commence a continuous task-shared and appropriate crosscheck of various external cues using NVG's,										
Ending Conditions:										
Mission ends or IMC conditions are encountered										
Ending Actions:										
New appropriate crosschecks are initiated (I E IMC radar crosscheck)										
Operator:										
Pilot										
Priority:										
9										
Allowable Delay (K):										
1 4										
Difficulty (D)										
Sheddable:										
No										
Resumable:										
Not Applicable										
Shed If Late:										
Not Applicable										
Feeds Back to Higher Level Goal										
No										
KNOWLEDGE										
Declarative:										
NVG Visual lookout technique Night NVG tactical formation flying Standard Operating Procedures										
Situational:										
Mission Plan Specifics of the tactical situation (e g threat/friendly forces, weather, terrain, etc ) Weather conditions, visibility, ambient light										

<u>OUTPUT/BEHAVIOUR</u>		<u>COGNITIVE/PERCEPTUAL PROCESS</u>	
Voice:	0 None	Voice:	0 None
Psychomotor:	1 3 Complex and or unfamiliar	Psychomotor:	5 Memorization/recall, calculation, estimation, deduction, reasoning
Memory:	1 Commit to memory (LTM and STM)	Memory:	5 Memorization
External Influenced Variables None		<u>COGNITIVE/PERCEPTUAL PROCESS</u>	
Output Interface: Night Vision Goggles Aircraft controls and throttles Aircraft displays (HUD,DDI,HSD)		Vision:	4 Spatial encoding, visual pattern recognition
<u>INPUT/SENSATION</u>		Audition:	0 None
Vision:	1 2 Pattern, spatial relationship, tracking, graphic displays	Kinesthetic:	0 None
Audition:	0 None	Memory:	3 Spatial decoding
Kinesthetic:	0 None	Internal Influenced Variables Perception that all aspects of NVG visual lookout technique are being completed, and confirmation that all appropriate formation members are NVG visual	
Memory:	2 3 Spatially coded	Input Interface: Outside view through NVG's, HUD	

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 7 1(a)	Goal:	that correct ground track is maintained	Goal ID:	7 3 7 1(a)	Source Goal:	7 2 6 1(a)
<b>Description:</b> Accurately follow the Ground Track information displayed in the HSD and HUD Fly on the displayed heading required to the next waypoint Monitor heading, drift, routing and ground track information Make appropriate heading corrections to regain and maintain desired ground track							
<b>Auditory Category:</b>				0	None	<b>Operator:</b>	Pilot
<b>External Cue:</b>				Not Applicable			
<b>Cognitive Category:</b>				4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)	<b>Completion Time:</b>	999
<b>Initiating Conditions:</b>				Aircraft's track over ground changes, or requires a change			
<b>Initiating Actions:</b>				HSD and HUD are checked to adjust heading			
<b>Ending Conditions:</b>				Correct groundtrack is achieved			
<b>Ending Actions:</b>				Groundtrack is maintained and monitored			
<b>Declarative:</b>				<u>KNOWLEDGE</u>			
<b>Situational:</b>				Sensor displays and symbology interpretation Basic navigation techniques			
<b>Situational:</b>				Specific route and/or map Winds			

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0	None	<b>Voice:</b>	0	None
<b>Psychomotor:</b>	1	1 Simple	<b>Psychomotor:</b>	1	Automatised, highly learned
<b>Memory:</b>	1	Commit to memory (LTM and STM)	<b>Memory:</b>	5	Memorization
<b>External Influenced Variables</b>		Aircraft heading			
<b>Output Interface:</b>	Aircraft controls and throttles		Aircraft displays (HUD,DDI,HSD)	Maps	
<u><b>INPUT/SENSATION</b></u>		<u><b>COGNITIVE/PERCEPTUAL PROCESS</b></u>			
<b>Vision:</b>	1	2 Pattern, spatial relationship, tracking, graphic displays	<b>Vision:</b>	4	Spatial encoding, visual pattern recognition
<b>Audition:</b>	0	None	<b>Audition:</b>	0	None
<b>Kinesthetic:</b>	0	None	<b>Kinesthetic:</b>	0	None
<b>Memory:</b>	2	3 Spatially coded	<b>Memory:</b>	3	Spatial decoding
<b>Internal Influenced Variables</b>		Perception that the aircrafts groundtrack corresponds to the desired groundtrack			
<b>Input Interface:</b>	HUD, DDI's, HSD, Map				



## Annex I - CF18 Air to Ground PCT Goal Analysis Results

<b>IP Number</b> 7 3 7 1(b)	<b>Goal:</b> that all aspects of an Air Coordination Order are followed	<b>Goal ID:</b> 7 3 7 1(b)	<b>Source Goal:</b> 7 2 6 1(b)
<b>Description:</b> Adhere to Air Coordination Order by accurately following the ACO routing displayed on the HSD Follow ACO Airspeed, Altitude and routing restrictions			
<b>Auditory Category:</b> 0 None		<b>Operator:</b> Pilot	<b>Completion Time:</b> 999
<b>External Cue:</b> Not Applicable		<b>Priority:</b> 3	<b>Allowable Delay (K):</b> 1 2 <b>Difficulty (D)</b>
<b>Cognitive Category:</b> 4 Spatial encoding, decoding, pattern recognition (reading maps, giving directions)		<b>Interruptable:</b> No	<b>Sheddable:</b> No
<b>Initiating Conditions:</b> An ACO routing or restriction is encountered		<b>Resumable:</b> Not Applicable	<b>Shed If Late:</b> Not Applicable
		<b>Feeds Back to Higher Level Goal</b> No	
<b><u>KNOWLEDGE</u></b>			
<b>Declarative:</b> Sensor displays and symbology interpretation Applicable orders, regulations and plans Standard Operating procedures			
<b>Situational:</b> Specific ACO Mission Plan			

<b><u>OUTPUT/BEHAVIOUR</u></b>	
<b>Voice:</b> 0 None	<b>Voice:</b> 0 None
<b>Psychomotor:</b> 0 None	<b>Psychomotor:</b> 0 None
<b>Memory:</b> 1 Commit to memory (LTM and STM)	<b>Memory:</b> 5 Memorization
<b>External Influenced Variables</b> Aircraft position, altitude, attitude, heading, speed and g	
<b>Output Interface:</b> Aircraft controls and throttles Aircraft displays (HUD,DDI,HSD) Maps	

<b><u>INPUT/SENSATION</u></b>	
<b>Vision:</b> 1 1 Text, Dual Reading	<b>Vision:</b> 3 Verbal encoding
<b>Audition:</b> 0 None	<b>Audition:</b> 0 None
<b>Kinesthetic:</b> 0 None	<b>Kinesthetic:</b> 0 None
<b>Memory:</b> 2 3 Spatially coded	<b>Memory:</b> 3 Spatial decoding
<b>Internal Influenced Variables</b> Belief that formation/aircraft is adhering to planned ACO restriction	
<b>Input Interface:</b> HUD, DDI's, HSD, Map	

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 7 1(c)	Goal:	that correct groundspeed is flown in order to comply with timings	Goal ID:	7 3 7 1(c)	Source Goal:	7 2 6 1(c)
Description: Adjust G/S by increasing or decreasing IAS Monitor ETA over waypoint on the HSD and fine tune G/S as required to arrive at required timing							
Operator: Pilot							
Priority: 6							
Allowable Delay (K):							
Difficulty (D) 0 1							
Interruptable: Yes							
Sheddable: No							
Resumable: No							
Shed If Late: Not Applicable							
Feeds Back to Higher Level Goal No							
Auditory Category: 0 None							
External Cue: Not Applicable							
Cognitive Category: 5 Memorization/recall, calculation, estimation, deduction, reasoning, high level ops							
Initiating Conditions: A required timing exists in the future							
Initiating Actions: Groundspeed is checked and adjusted based on other timings and navigation/HSD information							
Ending Conditions: Timing is met							
Ending Actions: Groundspeed is adjusted based on the next required timing, or groundspeed becomes a nonessential item							
Declarative: Sensor displays and symbology interpretation Basic navigation techniques							
Situational: Specific route and/or map Mission Plan Winds							
<u>KNOWLEDGE</u>							

OUTPUT/BEHAVIOUR

Voice: 0 None  
Psychomotor: 1 1 Simple  
Memory: 1 Commit to memory (LTM and STM)

External Influenced Variables Aircraft position, attitude, heading, speed and g  
Output Interface: Aircraft controls and throttles Aircraft displays (HUD,DDI,HSD) Maps

COGNITIVE/PERCEPTUAL PROCESS

Voice: 0 None  
Psychomotor: 1 Automatised, highly learned  
Memory: 5 Memorization

INPUT/SENSATION

Vision: 1 2 Pattern, spatial relationship, tracking, graphic displays  
Audition: 0 None  
Kinesthetic: 0 None  
Memory: 2 3 Spatially coded  
Internal Influenced Variables Perception that groundspeed is appropriate for next turning  
Input Interface: HUD, DDI's, HSD, Map

COGNITIVE/PERCEPTUAL PROCESS

Vision: 4 Spatial encoding, visual pattern recognition  
Audition: 0 None  
Kinesthetic: 0 None  
Memory: 3 Spatial decoding

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 7 1(d)	Goal:	that all Air Coordination Order restricted area's are avoided	Goal ID:	7 3 7 1(d)	Source Goal:	7 2 6 1(d)
Description:							
Avoid ACO restricted areas by monitoring HSD displayed information and verifying information on the Area MAP							
Auditory Category:							
0 None							
External Cue:							
Not Applicable							
Cognitive Category:							
4 Spatial encoding, decoding, pattern recognition (reading maps, giving directions)							
Initiating Conditions:							
An ACO restricted area is encountered							
Initiating Actions:							
HSD and Maps are monitored and crosschecked with ACO							
Ending Conditions:							
ACO restricted area no longer applies							
Ending Actions:							
Stop attending to goal							
Feeds Back to Higher Level Goal							
No							
Sheddtable:							
No							
Shed If Late:							
Not Applicable							
<u>KNOWLEDGE</u>							
Declarative:							
Sensor displays and symbology interpretation Applicable orders, regulations and plans Standard Operating procedures							
Situational:							
Specific ACO Mission Plan							

<u>OUTPUT/BEHAVIOUR</u>		<u>COGNITIVE/PERCEPTUAL PROCESS</u>	
Voice:	0 None	Voice:	0 None
Psychomotor:	0 None	Psychomotor:	0 None
Memory:	1 Commit to memory (LTM and STM)	Memory:	5 Memorization
External Influenced Variables	Aircraft position, altitude, attitude, heading, speed and g		
Output Interface:	Aircraft controls and throttles Aircraft displays (HUD,DDI,HSD) Maps		
<u>INPUT/SENSATION</u>		<u>COGNITIVE/PERCEPTUAL PROCESS</u>	
Vision:	1 1 Text, Dial Reading	Vision:	3 Verbal encoding
Audition:	0 None	Audition:	0 None
Kinesthetic:	0 None	Kinesthetic:	0 None
Memory:	2 3 Spatially coded	Memory:	3 Spatial decoding
Internal Influenced Variables	Belief that formation/aircraft is avoiding ACO restricted area		
Input Interface:	HUD, DDI's, HSD, Map		

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 7 2(b)	Goal:	that correct navigation is carried out and confirmed through HSD (sensor) information	Goal ID:	7 3 7 2(b)	Source Goal:	7 2 6 2(b)
Description:							
Select routing on the HSD System navigation in the CF-18 is simply a matter of following the displayed routing information on the HSD							
Operator: Pilot							
Priority: 6							
Allowable Delay (K):							
Difficulty (D) 0 15							
Interruptable: Yes							
Sheddable: No							
Resumable: No							
Shed If Late: Not Applicable							
Feeds Back to Higher Level Goal No							
KNOWLEDGE							
Declarative:							
Sensor displays and symbology interpretation Basic navigation techniques							
Situational:							
Specific route and/or map Mission Plan							
Initiating Actions:							
HSD is crosschecked with maps							
Ending Conditions:							
Mission ends or more specific navigation aids are required (1 E. approach aids)							
Ending Actions:							
Stop attending to goal							

OUTPUT/BEHAVIOUR

Voice: 0 None  
Psychomotor: 0 None  
Memory: 1 Commit to memory (LTM and STM)

External Influenced Variables Aircraft position, altitude, attitude, heading, speed and g  
Output Interface: Aircraft controls and throttles Aircraft displays (HUD,DDI,HSD) Maps

INPUT/SENSATION

Vision: 1 2 Pattern, spatial relationship, tracking, graphic displays  
Audition: 0 None  
Kinesthetic: 0 None  
Memory: 2 3 Spatially coded

Internal Influenced Variables Perception that sensor information match those expected from map (and/or memory)  
Input Interface: HUD, DDI's, HSD, Map

COGNITIVE/PERCEPTUAL PROCESS

Voice: 0 None  
Psychomotor: 0 None  
Memory: 5 Memorization

COGNITIVE/PERCEPTUAL PROCESS

Vision: 4 Spatial encoding, visual pattern recognition  
Audition: 0 None  
Kinesthetic: 0 None  
Memory: 3 Spatial decoding

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 7 2(e)	Goal:	that the Time on Target is achieved accurately through adjustments of aircraft speed and routing	Goal ID:	7 3 7 2(e)	Source Goal:	7 2 6 2(e)
Description:							
Adjust G/S and routing to arrive at target at predetermined TOT.							
Auditory Category:							
External Cue:							
Cognitive Category:							
Initiating Conditions:							
Initiating Actions:							
Ending Conditions:							
Ending Actions:							
Feeds Back to Higher Level Goal							
No							
KNOWLEDGE							
Declarative:							
Sensor displays and symbology interpretation							
Basic navigation techniques							
Situational:							
Specific route and/or map							
Mission Plan							

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 7 2(f)	Goal:	that correct navigation is carried out and confirmed through NVG visual ground references	Goal ID:	7 3 7 2(f)	Source Goal:	7 2 6 2(f)
Description:							
Conduct Navigation by visually finding ground references with NVG to verify that the correct routing is followed							
Operator: Pilot							
Priority: 6							
Allowable Delay (K):							
Difficulty (D) 0 4							
Interruptable: Yes							
Sheddable: No							
Resumable: No							
Shed If Late: Not Applicable							
Feeds Back to Higher Level Goal No							
KNOWLEDGE							
Declarative:							
NVG lookout techniques Sensor displays and symbology interpretation Basic navigation techniques							
Situational:							
Specific route and/or map Mission Plan Weather conditions, visibility, ambient light							
COGNITIVE/PERCEPTUAL PROCESS							
Voice: 0 None							
Psychomotor: 5 Memorization/recall, calculation, estimation, deduction, reasoning							
Memory: 5 Memorization							
External Influenced Variables Aircraft position, altitude, attitude, heading, speed and g							
Output Interface: Night Vision Goggles Aircraft controls and throttles Aircraft displays (HUD,DDI,HSD) Maps							
INPUT/SENSATION							
Vision: 1 2 Pattern, spatial relationship, tracking, graphic displays							
Audition: 0 None							
Kinesthetic: 0 None							
Memory: 2 3 Spatially coded							
Internal Influenced Variables Perception that NVG visual ground references match those expected from map (and/or memory)							
Input Interface: Outside view through NVG's, HUD, Map							

## Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 7 3(a)	Goal:	that all significant weather is avoided using both visual and sensor cues	Goal ID:	7 3 7 3(a)	Source Goal:	7 2 6 3(a)
Description:							
Monitor by visually looking outside the cockpit at significant weather build ups. Adjust sensors parameter to optimize weather detection and monitor displayed weather on the DDIs. Avoid weather by changing routing and flight profile.							
Auditory Category:	0	None					
External Cue:	Not Applicable						
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops					
Initiating Conditions:	Significant weather is encountered						
Initiating Actions:	Outside cues and/or radar is monitored and aircraft is manoeuvred to avoid weather						
Ending Conditions:	Weather is no longer a factor						
Ending Actions:	Stop attending to goal						
<b>Situational:</b> Visual Lookout Cues Radar cues Study of weather forecast and actual weather							

## OUTPUT/BEHAVIOUR

Voice: 0 Nonc

**Psychomotor:** 1 2 Difficult but familiar

**Memory:**

**External Influenced Variables** Aircraft position, altitude, attitude, heading, speed and g

**Output Interface:** Radar Aircraft controls and throttles Aircraft displays (HUD,DDI,HSD)

## INPUT/SENSATION

**Vision:** 11 Text, Dial Reading

**Audition:** 0 None

**Kinesthetic:** 1 1 Simple stimulus

**Memory:** 23 Spatially coded

### Internal Influenced Variables

**Input Interface:** Outside view, radar display, HUD

## COGNITIVE/PERCEPTUAL PROCESS

**Voice:** 0 Nonc

**Psychomotor:** 4 Spatial encoding

## Memory: 5 Memorization

## COGNITIVE/PERCEPTUAL PROCESS

**Vision:** 3 Verbal encoding

**Audition:** 0 Nonc

**Kinesthetic:** 1 Automatised, highly learned perception

### Memory: 3 Spatial decoding

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 7 3(b)	Goal:	that all obstacles are avoided	Goal ID:	7 3 7 3(b)	Source Goal:	7 2 6 3(b)	
Description:								
Monitor obstacles visually	Avoid obstacles by changing routing and flight path	Operator:	Pilot	Completion Time:	999			
		Priority:	1	Allowable Delay (K):	Difficulty (D)			
		Interruptable:	No	Sheddable:	No			
		Resumable:	Not Applicable	Shed If Late:	Not Applicable			
		Feeds Back to Higher Level Goal	No					
				<u>KNOWLEDGE</u>				
Auditory Category:	0	None						
External Cue:	Not Applicable						Declarative:	Basic Flying
Cognitive Category:	1	Automatized, highly learned (easy to do for a trained person)						
Initiating Conditions:	An obstacle is encountered							
Initiating Actions:	Manoeuvre to avoid obstacle							
Ending Conditions:	Obstacle is avoided, or obstacle avoidance no longer becomes a factor (high level)							
Ending Actions:	Stop attending to goal							
				<u>Situational:</u>				
				Visual Lookout Cues Knowledge of area obstacles (map study ) Specific mission plan				

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0	None	<b>Voice:</b>	0	None	
<b>Psychomotor:</b>	1	2	Difficult but familiar	<b>Psychomotor:</b>	4	Spatial encoding
<b>Memory:</b>	1	Commit to memory (LTM and STM)	<b>Memory:</b>	5	Memorization	
<b>External Influenced Variables</b> Aircraft position, altitude, attitude, heading, speed and g						
<b>Output Interface:</b>		Aircraft controls and throttles    HUD    Maps				
<u><b>INPUT/SENSATION</b></u>						
<b>Vision:</b>	2	Peripheral	<b>Vision:</b>	1	Automatised, highly learned perception	
<b>Audition:</b>	0	None	<b>Audition:</b>	0	None	
<b>Kinesthetic:</b>	1	1	Simple stimulus	<b>Kinesthetic:</b>	1	Automatised, highly learned perception
<b>Memory:</b>	2	1	Accessible, familiar	<b>Memory:</b>	1	Automatised
<b>Internal Influenced Variables</b> Perception that aircraft is not in conflict with an obstacle						
<b>Input Interface:</b>		Outside view, HUD				



Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 7 3(c)	Goal:	that all terrain is avoided	Goal ID:	7 3 7 3(c)	Source Goal:	7 2 6 3(c)			
Description:										
At all times while flying in the low-level environment the primary task is terrain clearance Monitor terrain visually Avoid terrain by changing flight path										
Auditory Category:	0	None	Operator:	Pilot	Completion Time:	999				
External Cue:	Not Applicable		Priority:	1	Allowable Delay (K):	Difficulty (D)				
Cognitive Category:	1	Automatized, highly learned (easy to do for a trained person)	Interruptable:	No	Sheddable:	No				
Initiating Conditions:	Terrain is encountered		Resumable:	Not Applicable	Shed If Late:	Not Applicable				
Initiating Actions:	Manoeuvre to avoid terrain		Feeds Back to Higher Level Goal	No	<u>KNOWLEDGE</u>					
Ending Conditions:	Terrain is avoided or no longer becomes a factor (high level)		Declarative:	Basic Flying						
Ending Actions:	Stop attending to goal		Situational:	Visual Lookout Cues Knowledge of area terrain (map study ) Specific mission plan						

<u>OUTPUT/BEHAVIOUR</u>		<u>COGNITIVE/PERCEPTUAL PROCESS</u>	
Voice:	0 None	Voice:	0 None
Psychomotor:	1 2 Difficult but familiar	Psychomotor:	4 Spatial encoding
Memory:	1 Commit to memory (LTM and STM)	Memory:	5 Memorization
External Influenced Variables	Aircraft position, altitude, attitude, heading, speed and g		
Output Interface:	Aircraft controls and throttles HUD Maps		
<u>INPUT/SENSATION</u>		<u>COGNITIVE/PERCEPTUAL PROCESS</u>	
Vision:	2 Peripheral	Vision:	1 Automatised, highly learned perception
Audition:	1 Tone or simple auditory signal	Audition:	1 Automatised, highly learned perception
Kinesthetic:	1 1 Simple stimulus	Kinesthetic:	1 Automatised, highly learned perception
Memory:	2 1 Accessible, familiar	Memory:	1 Automatised
Internal Influenced Variables	Perception that aircraft is not in conflict with terrain		
Input Interface:	Outside view, HUD		

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 7 3(d)	Goal:	that all other aircraft are avoided	Goal ID:	7 3 7 3(d)	Source Goal:	7 2 6 3(e)
<b>Description:</b> Monitor other Aircraft by establishing cross check between visual look out and sensor information displayed on the HUD and DDIs Avoid other Aircraft by changing flight path							
<b>Operator:</b> Pilot							
<b>Priority:</b> 1							
<b>Allowable Delay (K):</b> <b>Difficulty (D)</b>							
<b>Interruptable:</b> No							
<b>Sheddable:</b> No							
<b>Resumable:</b> Not Applicable							
<b>Shed If Late:</b> Not Applicable							
<b>Feeds Back to Higher Level Goal</b> No							
<b>Auditory Category:</b> 0      None							
<b>External Cue:</b> Not Applicable							
<b>Cognitive Category:</b> 2      Passive monitoring of speech/auditory signals							
<b>Initiating Conditions:</b> An aircraft or formation is encountered							
<b>Initiating Actions:</b> Manoeuvre to avoid aircraft							
<b>Ending Conditions:</b> Aircraft is avoided							
<b>Ending Actions:</b> Stop attending to goal							
<b>Situational:</b> Visual Lookout Cues      Specific mission plan							

<u>OUTPUT/BEHAVIOUR</u>				<u>COGNITIVE/PERCEPTUAL PROCESS</u>			
Voice:	0	None		Voice:	0	None	
Psychomotor:	1	2	Difficult but familiar	Psychomotor:	4	Spatial encoding	
Memory:	1	Commit to memory (LTM and STM)		Memory:	5	Memorization	
External Influenced Variables Aircraft position, altitude, attitude, heading, speed and g				<u>COGNITIVE/PERCEPTUAL PROCESS</u>			
Output Interface: Aircraft controls and throttles HUD Maps				Vision:	1	Automatised, highly learned perception	
<u>INPUT/SENSATION</u>				Audition:	5	Verbal decoding, speech recognition	
Vision:	2	Peripheral		Kinesthetic:	1	Automatised, highly learned perception	
Audition:	5	Speech input (attended to, salient to the primary task)		Memory:	1	Automatised	
Kinesthetic:	1	Simple stimulus					
Memory:	2	Accessible, familiar					
Internal Influenced Variables Perception that aircraft is not in conflict with another aircraft							
Input Interface: Outside view, HUD							

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 8 1(a)	Goal:	that the desired radar modes and parameters are set for search and monitored by visually referencing the radar display on the right DDI		Goal ID:	7 3 8 1(a)	Source Goal:	7 2 7 1(a)
Description:	Confirm that the desired Radar modes and parameters are set for search Monitor radar visually on the DDIs Adjust radar azimuth and elevation search to cover assigned airspace							
		Operator:		Pilot	Completion Time:		3	
		Priority:		4	Allowable Delay (K):		1 75	
		Interruptable:		Yes	Sheddable:		No	
		Resumable:		Yes	Shed If Late:		Not Applicable	
		Feeds Back to Higher Level Goal		No				
Auditory Category:		0	None	<u>KNOWLEDGE</u>				
External Cue:		Not Applicable						
Cognitive Category:		1	Automatized, highly learned (easy to do for a trained person)	Declarative:		Aircraft operating procedures, standard operating procedures, radar displays/controls		
Initiating Conditions:		Begin the tactical phase of the mission						
Initiating Actions:		Pilot observes the radar search parameters on the radar display on the right DDI						
Ending Conditions:		Tactical phase of the mission ends						
Ending Actions:		Perform other non-tactical mission tasks						
		Tactical situation, aircraft altitude/speed, mission objectives/requirements, weather, terrain						

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 8 1(g)	Goal:	that the pilot accurately monitors and interprets the tactical Link-16 information displayed on his HSD	
Description:	The pilot will visually reference his HSD to monitor the Link 16 display			
Goal ID:	7 3 8 1(g)	Source Goal:	7 2 7 1(h)	
Operator:	Pilot	Completion Time:	5	
Priority:	4	Allowable Delay (K):	1 5	Difficulty (D)
Interruptable:	Yes	Sheddable:	No	
Resumable:	Yes	Shed If Late:	Not Applicable	
Feeds Back to Higher Level Goal	No			
<b>KNOWLEDGE</b>				
Auditory Category:	0 None	Declarative:	Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, Link 16 displays/controls	
External Cue:	Not Applicable			
Cognitive Category:	5 Memorization/recall, calculation, estimation, deduction, reasoning, high level ops			
Initiating Conditions:	Tactical phase of the mission begins Link 16 information is required by the pilot			
Initiating Actions:	Pilot visually references the Link 16 display on the HSD			
Ending Conditions:	Link 16 information is no longer required and/or the tactical phase of the mission ends			
Ending Actions:	Current mission tasks performed Tactical Link 16 information, displayed on the HSD, is no longer monitored			
<b>COGNITIVE/PERCEPTUAL PROCESS</b>				
Voice:	0 None			
Psychomotor:	0 None			
Memory:	5 Memorization			
External Influenced Variables	Link 16 display settings and parameters			
Output Interface:	HSD, LINK-16			
<b>INPUT/SENSATION</b>				
Vision:	1 2 Pattern, spatial relationship, tracking, graphic displays			
Audition:	0 None			
Kinesthetic:	0 None			
Memory:	2 4 Semantically coded			
Internal Influenced Variables	Belief that the tactical situation is being monitored on the Link 16 display, and all relevant tactical information is being interpreted by the pilot			
Input Interface:	Link 16 display on HSD, correlation of other tactical information (radar/AMIRS/external agencies) with Link 16 displayed information			

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 8 2(a)	Goal:	that the assigned AMIRS search parameters are set and monitored by visually referencing the AMIRS display on the left DDI	Goal ID:	7 3 8 2(a)	Source Goal:	7 2 7 2(a)
Description:							
The pilot will set his assigned AMIRS search parameters via HOTAS or manual selection. He will monitor and maintain these parameters by visually checking the AMIRS display on the left DDI. If they need adjusting, he will accomplish this via HOTAS/manual selection of the AMIRS search parameters on the left DDI.							
Auditory Category:		0	None	Operator:		Pilot	Completion Time: 2
External Cue:			Not Applicable	Priority:		4	Allowable Delay (K): 1.75    Difficulty (D)
Cognitive Category:		1	Automatized, highly learned (easy to do for a trained person)	Interruptable:		No	Sheddable: No
Initiating Conditions:		Tactical phase of the mission begins. Tactical IR imagery is required by the pilot while operating in day/night VMC conditions.					
Initiating Actions:		TDC assigned to the left DDI. Pilot visually checks the current AMIRS search parameters displayed on the left DDI.					
Ending Conditions:		Tactical phase of mission ends. AMIRS information no longer required. IMC flight conditions encountered.					
Ending Actions:		TDC re-assigned away from left DDI. AMIRS display no longer monitored.					
Feeds Back to Higher Level Goal				No			
Declarative:				Situational:			
Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, AMIRS displays/controls				Tactical situation, aircraft altitude/speed, mission objectives/requirements, atmospheric conditions, terrain, time of day			
<u>KNOWLEDGE</u>							

OUTPUT/BEHAVIOUR

Voice:	0	None
Psychomotor:	1	Simple
Memory:	1	Commit to memory (LTM and STM)

External Influenced Variables: AMIRS search modes, AMIRS search parameters

Output Interface: DDI, HOTAS, AMIRS

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None
Psychomotor:	1	Automatised, highly learned
Memory:	5	Memorization

INPUT/SENSATION

Vision:	1	1 Text, Dial Reading
Audition:	0	None
Kinesthetic:	1	1 Simple stimulus
Memory:	2	3 Spatially coded

Internal Influenced Variables: Belief that the assigned AMIRS search parameters have been set and are being maintained

Input Interface: AMIRS display on the left DDI

COGNITIVE/PERCEPTUAL PROCESS

Vision:	3	Verbal encoding
Audition:	0	None
Kinesthetic:	1	Automatised, highly learned perception
Memory:	3	Spatial decoding

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 8 3(f)	Goal:	that no visually unobserved bogeys/bandits are able to engage the formation at night	Goal ID:	7 3 8 3(f)	Source Goal:	7 2 7 3(f)
<b>Description:</b>							
The pilot will maintain an NVG visual search pattern throughout all phases of a night mission to ensure that no unobserved bogeys/bandits are able to engage his formation without being visually observed							
He accomplishes this by developing a scanning pattern that allows him to scan all of the airspace around his aircraft in a deliberate, sequential fashion. For example, he may start by observing his deep six o'clock position, then scan out the left side of the canopy until arriving at the 12 o'clock position. He will repeat the same process on the right side of the aircraft, then search the extreme vertical above and below his aircraft. This NVG visual search pattern is then repeated throughout the mission							
Auditory Category:	0	None					
External Cue:	Not Applicable						
Cognitive Category:	4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)					
Initiating Conditions:	Tactical phase of mission begins. Operating in night, VMC flight conditions. Significant prob. Of bogeys/bandits operating in near proximity exists.						
Initiating Actions:	Begin visual search and scan patterns with NVGs						
Ending Conditions:	Tactical phase of mission ends. IMC flight conditions are encountered. Reaction to observed bogey/bandit begins.						
Ending Actions:	Stop visual search and scan patterns with NVGs						
<b><u>KNOWLEDGE</u></b>							
<b>Declarative:</b>							
NVG operating procedures, standard operating procedures, visual scan technique with NVGs							
<b>Situational:</b>							
Mission objectives/requirements, tactical situation, environmental conditions							

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0	None	<b>Voice:</b>	0	None
<b>Psychomotor:</b>	1	1 Simple	<b>Psychomotor:</b>	1	Automatised, highly learned
<b>Memory:</b>	1	Commit to memory (LTM and STM)	<b>Memory:</b>	5	Memorization
<b>External Influenced Variables</b>		NVG settings, cockpit lighting, exterior aircraft lighting			
<b>Output Interface:</b>		NVGs			
<b><u>INPUT/SENSATION</u></b>					
<b>Vision:</b>	1	2 Pattern, spatial relationship, tracking, graphic displays	<b>Vision:</b>	4	Spatial encoding, visual pattern recognition
<b>Audition:</b>	0	None	<b>Audition:</b>	0	None
<b>Kinesthetic:</b>	0	None	<b>Kinesthetic:</b>	0	None
<b>Memory:</b>	2	3 Spatially coded	<b>Memory:</b>	3	Spatial decoding
<b>Internal Influenced Variables</b>		Belief that an NVG visual search is being maintained, and that no unobserved bogeys/bandits have been able to engage the formation			
<b>Input Interface:</b>		NVG visible environment surrounding aircraft, correlation of other tactical information			

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 3 8 3(g)	Goal:	that visual contact of other formation members will be maintained using NVGs	Goal ID:	7 3 8 3(g)	Source Goal:	7 2 7 3(g)
Description:	The NVG-equipped pilot will use normal visual cues to allow him to monitor and maintain visual contact with other formation members. In addition, he will use the discreet exterior lighting on other formation member's aircraft to facilitate the visual tracking of his formation aircraft						
Auditory Category:	0	None	Operator:	Pilot	Completion Time:	7	
External Cue:		Not Applicable	Priority:	9	Allowable Delay (K):	Difficulty (D)	
Cognitive Category:	4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)	Interruptable:	No	Sheddable:	No	
Initiating Conditions:	NVG contact with formation members is established using NVGs		Resumable:	Not Applicable	Shed If Late:	Not Applicable	
			Feeds Back to Higher Level Goal	No			
	<u>KNOWLEDGE</u>						
			Declarative:	NVG operating procedures, standard operating procedures, visual scan technique with NVGs			
Initiating Actions:	Visual cues (canopy codes, geographical reference, relative bearing) are used to maintain NVG contact on formation members		Situational:	Mission objectives/requirements, tactical situation, environmental conditions			
Ending Conditions:	NVG contact with formation members is no longer required or is lost						
Ending Actions:	Visual cues used to maintain NVG contact on formation members are disregarded			Current mission tasks performed			

OUTPUT/BEHAVIOUR

Voice: 0 None

Psychomotor: 1 1 Simple

Memory: 1 Commit to memory (LTM and STM)

External Influenced Variables NVG settings, cockpit lighting, exterior aircraft lighting

Output Interface: NVGs

COGNITIVE/PERCEPTUAL PROCESS

Voice: 0 None

Psychomotor: 1 Automatised, highly learned

Memory: 5 Memorization

INPUT/SENSATION

Vision: 1 2 Pattern, spatial relationship, tracking, graphic displays

Audition: 0 None

Kinesthetic: 0 None

Memory: 2 3 Spatially coded

Internal Influenced Variables Belief that NVG contact is being maintained on other formation members

Input Interface: NVG visible environment surrounding aircraft, correlation of other tactical information (radar/visual/air-to-air tacan/Link-16(external agency/communications))

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7 1 1(a)	Goal:	that all factor groups are targeted by the formation IAW the established radar search, sort, and targeting contract	Goal ID:	7 7 1 1(a)	Source Goal:	7 5 2 2(a)
Description:	The formation members will scan their assigned radar search volume. They will call out all detected targets within their search volume to other formation members via Have Quick II/Link 16. The formation lead will assign targeting responsibilities if multiple groups are present. At the roll range, formation members will meld their radars to their assigned group and begin to sort. Narrowing down their radar scan volume, and using a different radar mode optimized for sorting multiple contacts (i.e. TWS), the formation members study their radar display. As the radar breaks out the multiple targets in the group, each pilot commands a lock on his target. The formation members then call the status of their sort, and then continue the remainder of the intercept as per lead's direction or the mission briefing.						
Auditory Category:	0	None					
External Cue:	Not Applicable						
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops					
Initiating Conditions:	Tactical phase of mission begins						
Initiating Actions:	Assigned radar search and sort parameters are set						
Ending Conditions:	Tactical phase of mission ends						
Ending Actions:	Stop attending to task						
<u>OUTPUT/BEHAVIOUR</u>							
Voice:	0	None					
Psychomotor:	1 3	Complex and or unfamiliar					
Memory:	1	Commit to memory (LTM and STM)					
External Influenced Variables	Radar search and track modes, radar antenna elevation, radar azimuth, other radar parameters						
Output Interface:	HUD HOTAS APG-73 display						
<u>INPUT/SENSATION</u>							
Vision:	1 2	Pattern, spatial relationship, tracking, graphic displays					
Audition:	0	None					
Kinesthetic:	1 1	Simple stimulus					
Memory:	2 4	Semantically coded					
Internal Influenced Variables	Belief that the radar contract has been properly employed						
Input Interface:	Radar Link-16						

Operator:	Pilot	Completion Time:	
Priority:	4	Allowable Delay (K):	1 25
Interruptable:	Yes	Difficulty (D)	
Resumable:	Yes	Sheddable:	No
Feeds Back to Higher Level Goal	No	Shed If Late:	Not Applicable
<u>KNOWLEDGE</u>			
Declarative:	Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, tactics		
Situational:	Mission objectives/requirements, tactical situation, environmental conditions, aircraft altitude/speed		

<u>COGNITIVE/PERCEPTUAL PROCESS</u>			
Voice:	0	None	
Psychomotor:	5	Memorization/recall, calculation, estimation, deduction, reasoning	
Memory:	5	Memorization	

<u>COGNITIVE/PERCEPTUAL PROCESS</u>			
Vision:	4	Spatial encoding, visual pattern recognition	
Audition:	0	None	
Kinesthetic:	1	Automatized, highly learned perception	
Memory:	3	Verbal decoding	



Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7 1 1(g)	Goal:	that all enemy contacts on the Link 16 display are acquired	Goal ID:	7 7 1 1(g)	Source Goal:	7 5 2 2(g)
<b>Description:</b> Acquiring enemy contacts on the Link 16 display involves interpreting the link 16 information displayed on the HSD. Contacts that have been positively identified as enemy, will normally be colored red. This enemy contact information can then be passed from the Link 16 to one of the on-board targeting sensors (i.e. the AMIRS or Radar), or used to carry-out a visual acquisition of the contacts (employing NVGs if conducting night operations)							
<b>Auditory Category:</b>		0 None		<b>Operator:</b>		Pilot	
<b>External Cue:</b>		Not Applicable		<b>Priority:</b>		4	
<b>Cognitive Category:</b>		4 Spatial encoding, decoding, pattern recognition (reading maps, giving directions)		<b>Allowable Delay (K):</b>		1 5	
<b>Initiating Conditions:</b>		Tactical phase of mission begins. Enemy contacts are displayed on Link 16 display		<b>Difficulty (D):</b>		No	
<b>Initiating Actions:</b>		Link 16 display on HSD is visually referenced		<b>Sheddable:</b>		No	
<b>Ending Conditions:</b>		Tactical phase of mission ends		<b>Resumable:</b>		Yes	
<b>Ending Actions:</b>		Enemy contacts on Link 16 display are no longer a factor/are ignored		<b>Shed If Late:</b>		Not Applicable	
<b>OUTPUT/BEHAVIOUR</b>				<b>KNOWLEDGE</b>			
<b>Voice:</b>				<b>Declarative:</b>			
0 None				Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures			
<b>Psychomotor:</b>				<b>Situational:</b>			
0 None				Mission objectives/requirements, tactical situation			
<b>Memory:</b>							
1 Commit to memory (LTM and STM)							
<b>External Influenced Variables</b>							
None							
<b>Output Interface:</b>							
Link-16 display							
<b>COGNITIVE/PERCEPTUAL PROCESS</b>							
<b>Vision:</b>				<b>Vision:</b>			
1 2 Pattern, spatial relationship, tracking, graphic displays				4 Spatial encoding, visual pattern recognition			
<b>Audition:</b>				<b>Audition:</b>			
0 None				0 None			
<b>Kinesthetic:</b>				<b>Kinesthetic:</b>			
0 None				0 None			
<b>Memory:</b>				<b>Memory:</b>			
2 4 Semantically coded				3 Verbal decoding			
<b>INPUT/SENSATION</b>							
<b>Internal Influenced Variables</b>							
Belief that enemy contacts have been acquired on Link 16 display							
<b>Input Interface:</b>							
Link 16							

## **OUTPUT/BEHAVIOUR**

## INPUT/SENSATION

<b>Vision:</b>	1 2	Pattern, spatial relationship, tracking, graphic displays
<b>Audition:</b>	0	None
<b>Kinesthetic:</b>	0	None
<b>Memory:</b>	2 4	Semantically coded
<b>Internal Influenced Variables</b>	Belief that unknown radar contacts have been interrogated with IFF	
<b>Input Interface:</b>	Radar Link-16 IFF	

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7 1 1(n)	Goal:	that Have Quick II secure communications are employed by all formation members in a clear, concise fashion	Goal ID:	7 7 1 1(n)	Source Goal:	7 4 2 2(b)
Description:							
The pilot reports the target via secure voice transmission when using Have Quick II. The transmission is sent using Comm 1 or 2 (whichever one is configured for Have Quick II transmission)							
Auditory Category:	5	Voice Output					
External Cue:	No						
Cognitive Category:	3	Verbal encoding, decoding, speech production, listening					
Initiating Conditions:	Tactical phase of mission begins	Secure voice communications required					
Initiating Actions:	Have Quick II secure communications initiated						
Ending Conditions:	Tactical phase of mission ends	Secure voice communications not required/possible					
Ending Actions:	Cease Have Quick II secure communications						
							<u>KNOWLEDGE</u>
							<b>Declarative:</b> Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, standard communications format/procedures
							<b>Situational:</b> Mission objectives/requirements, tactical situation, environmental conditions, radio range/line-of-sight limitations, complex communication jamming encountered

OUTPUT/BEHAVIOUR

Voice:	1	Voice Output		
Psychomotor:	1 1	Simple		
Memory:	1	Commit to memory (LTM and STM)		
External Influenced Variables	COMM 1/2 controls	UFC		
Output Interface:	Have Quick II	COMM 1/2		

COGNITIVE/PERCEPTUAL PROCESS

Voice:	3	Speech production		
Psychomotor:	1	Automatised, highly learned		
Memory:	5	Memorization		

INPUT/SENSATION

<b>Vision:</b>	1 1	Text, Dial Reading	
<b>Audition:</b>	5	Speech input (attended to, salient to the primary task)	
<b>Kinesthetic:</b>	0	None	
<b>Memory:</b>	2 4	Semantically coded	
<b>Internal Influenced Variables</b>		Belief that secure communications have been employed using Have Quick II	
<b>Input Interface:</b>	COMM 1/2	Have Quick II	

COGNITIVE/PERCEPTUAL PROCESS

Vision:	3	Verbal encoding		
Audition:	5	Verbal decoding, speech recognition		
Kinesthetic:	0	None		
Memory:	3	Verbal decoding		

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7 2 2(b)	Goal:	that chaff is dispensed	Goal ID:	7 7 2 2(b)	Source Goal:	7 5 2 3(b)
Description:							
Chaff is dispensed by selecting the desired program on the ALE-47 controls, and either by activating the canopy panic button or via HOTAS controls							
Auditory Category:				Operator:	Pilot	Completion Time:	
External Cue:				Priority:	2	Allowable Delay (K):	1 1
Cognitive Category:				Interruptable:	No	Sheddable:	No
Initiating Conditions:				Resumable:	Not Applicable	Shed If Late:	Not Applicable
				Feeds Back to Higher Level Goal	No		
<u>KNOWLEDGE</u>							
				Declarative:	Mission objectives/priorities, tactical situation, weather, terrain, threat activity and location Intelligence on enemy electronic order of battle,		
				Situational:	Type of threat		

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None	Voice:	0	None
Psychomotor:	1	Simple	Psychomotor:	1	Automatised, highly learned
Memory:	1	Commit to memory (LTM and STM)	Memory:	5	Memorization
External Influenced Variables Aircraft speed, g Aircraft configuration (chaff/flare bundles)					
Output Interface: DEWS ALR 67 (rwr)					
<u>INPUT/SENSATION</u>					
Vision:	1	Text, Dial Reading	Vision:	3	Verbal encoding
Audition:	1	Tone or simple auditory signal	Audition:	1	Automatised, highly learned perception
Kinesthetic:	1	Simple stimulus	Kinesthetic:	1	Automatised, highly learned perception
Memory:	2	Spatially coded	Memory:	3	Spatial decoding
Internal Influenced Variables A belief that chaff has been successfully deployed					
Input Interface: DEWS ALR 67 (rwr)					

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7.2 2(c)	Goal:	that all correlated radar threats are jammed effectively	Goal ID:	7 7 2 2(c)	Source Goal:	7 5 2 3(c)
<b>Description:</b> The Jammers generally function automatically. The pilot can optimize Jammers employment by analyzing their coverage on the Integrated HSD display, ensuring that the intended enemy threats are within the displayed Jammers coverage. If the enemy threats are outside the displayed Area, the pilot will manoeuvre the aircraft to place the threats within coverage.							
Auditory Category:	1	Tone or Simple Auditory Sign					
External Cue:	No						
Cognitive Category:	4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)					
Initiating Conditions:	Correlated radar threat is deemed a priority sufficient to require jamming						
Initiating Actions:	Observe jamming is being applied to correlated radar threat						
Ending Conditions:	Correlated radar threat no longer constitutes a threat sufficient to warrant jamming						
Ending Actions:	Observe jamming has ceased						
<u><b>KNOWLEDGE</b></u>							
<b>Declarative:</b> Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, tactics, enemy tactics, enemy electronic order of battle							
<b>Situational:</b> Mission objectives/requirements, tactical situation, aircraft altitude/flight path/speed, environmental conditions							

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0	None	<b>Voice:</b>	0	None	
<b>Psychomotor:</b>	1	1	Simple	<b>Psychomotor:</b>	1	Automatised, highly learned
<b>Memory:</b>	1	Commit to memory (LTM and STM)	<b>Memory:</b>	5	Memorization	

External Influenced Variables Aircraft position, altitude, attitude, heading, speed and g. Jammer controls/settings

Output Interface: Jammer display HSD RWR

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

Vision:	1 2	Pattern, spatial relationship, tracking, graphic displays	Vision:	4	Spatial encoding, visual pattern recognition
Audition:	1	Tone or simple auditory signal	Audition:	1	Automatised, highly learned perception
Kinesthetic:	0	None	Kinesthetic:	0	None
Memory:	2 4	Semantically coded	Memory:	3	Verbal decoding

Internal Influenced Variables Belief that jammers have been effectively employed

Input Interface: RWR Link 16 Enemy radar/missile activity

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7 2 3(e)	Goal:	that all air weapons employed by the enemy are negated	Goal ID:	7 7 2 3(e)	Source Goal:	7 5 2 4(e)		
Description:									
The pilots will Negate Enemy Air Weapons Employment by manoeuvring and remaining outside enemy air weapons effective range and by employing DEWS									
Auditory Category:				0	None	Operator:		Pilot	
External Cue:				Not Applicable				Completion Time:	
Cognitive Category:				5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops	Priority:		1	
Initiating Conditions:				Enemy air weapon has been detected				Allowable Delay (K):	Difficulty (D)
Initiating Actions:				Manoeuvre the aircraft				Interruptable:	No
Ending Conditions:				Enemy air weapon has been defeated				Sheddable:	No
Ending Actions:				Continue with visual look out				Resumable:	Not Applicable
								Shed If Late:	Not Applicable
								Feeds Back to Higher Level Goal	No
<u>KNOWLEDGE</u>									
Declarative:									
Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, tactics, enemy tactics, enemy order of battle, enemy weapons, effective actions to defeat enemy weapons									
Situational:									
Aircraft altitude/flight path/speed, environmental conditions Enemy type/range/altitude/position Type of weapon employed									

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None
Psychomotor:	1 3	Complex and or unfamiliar
Memory:	1	Commit to memory (LTM and STM)
External Influenced Variables	Aircraft position, altitude, attitude, heading, speed and g Aircraft counter measures	
Output Interface:	Aircraft controls and throttles	

Voice:	0	None
Psychomotor:	5	Memorization/recall, calculation, estimation, deduction, reasoning
Memory:	5	Memorization

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

Vision:	1 2	Pattern, spatial relationship, tracking, graphic displays
Audition:	3	Auditory pattern
Kinesthetic:	0	None
Memory:	2 5	Complex operation
Internal Influenced Variables	Belief that the missile has been defeated	
Input Interface:	RWR, enemy missile	

Vision:	4	Spatial encoding, visual pattern recognition
Audition:	3	Verbal decoding
Kinesthetic:	0	None
Memory:	5	Recall

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7 2 4(c)	Goal:	that the enemy is prevented from using radar guided missiles or that airborne radar guided missiles are defeated	Goal ID:	7 7 2 4(c)	Source Goal:	7 5 2 5(c)
<b>Description:</b> The Air-to-Air RMD is initially performed by an aggressive manoeuvre into the Notch (at 90 degrees from incoming enemy radar) while employing Chaff. Manoeuvre the aircraft downwards to ensure that enemy radar will be looking through ground clutter. Update heading to maintain the Notch by assessing DEWS displayed information. At the appropriate range, transition into IRMD							
Auditory Category:	3	Auditory Pattern					
External Cue:	No						
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops					
Initiating Conditions:	Enemy has launched a missile						
Initiating Actions:	Manoeuvre the aircraft						
Ending Conditions:	Enemy is no longer in a Radar missile WEZ						
Ending Actions:	Stop attending to goal						
<u>KNOWLEDGE</u>							
			Declarative:	Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, tactics, enemy tactics, enemy order of battle, enemy weapons, effective actions to defeat enemy weapons			
			Situational:	Aircraft altitude/flight path/speed, environmental conditions. Enemy type/range/altitude/position. Type of weapon employed			

OUTPUT/BEHAVIOUR

Voice: 0 None

Psychomotor: 1 2 Difficult but familiar

Memory: 1 Commit to memory (LTM and STM)

COGNITIVE/PERCEPTUAL PROCESS

Voice: 0 None

Psychomotor: 4 Spatial encoding

Memory: 5 Memorization

External Influenced Variables Aircraft position, altitude, attitude, heading, speed and g. Aircraft counter measures

Output Interface: Aircraft controls and throttles

INPUT/SENSATION

Vision: 1 2 Pattern, spatial relationship, tracking, graphic displays

Audition: 3 Auditory pattern

Kinesthetic: 1 1 Simple stimulus

Memory: 2 5 Complex operation

COGNITIVE/PERCEPTUAL PROCESS

Vision: 4 Spatial encoding, visual pattern recognition

Audition: 3 Verbal decoding

Kinesthetic: 1 Automatised, highly learned perception

Memory: 5 Recall

Internal Influenced Variables Belief that the enemy aircraft is outside of a radar missile WEZ and that incoming missile has been defeated

Input Interface: RWR, enemy missile

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7 2 4(g)	Goal:	that appropriate actions are taken to counter threat displayed on the RWR	Goal ID:	7 7 2 4(g)	Source Goal:	7 4 2 1(b)
Description:	<p>The primary reference for displayed RWR threat emission information is the HSD. When a spike is displayed visually/aurally to the pilot, his reaction will be based on the range and lethality of the spike. If he can correlate the spike to a non-lethal threat, his reaction will likely be to continue to remain outside the threat's lethal engagement zone, or to engage and kill the enemy before it has an opportunity to engage his aircraft.</p> <p>If he correlates the spike on his HSD to a threat that poses a lethal threat to his aircraft, the pilot must react defensively. He will use a combination of aggressive manoeuvres, chaff/flare, jamming, and deception to try and defeat the enemy radar and/or missiles.</p>						
Auditory Category:	3	Auditory Pattern		Operator:	Pilot	Completion Time:	
External Cue:	No			Priority:	2	Allowable Delay (K):	1 2
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops		Interruptable:	No	Sheddable:	No
Initiating Conditions:	RWR threat has been detected			Resumable:	Not Applicable	Shed If Late:	Not Applicable
Initiating Actions:	Manoeuvre the aircraft			Feeds Back to Higher Level Goal	No		
Ending Conditions:	Enemy is no longer a threat			<b>KNOWLEDGE</b>			
Ending Actions:	Monitor enemy and RWR			Declarative:	Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, tactics, enemy tactics, enemy order of battle, enemy weapons. RWR interpretation		
				Situational:	Enemy type/range/altitude/position. Type of weapon employed. Information displayed on RWR.		

OUTPUT/BEHAVIOUR

Voice: 0 None

Psychomotor: 1 2 Difficult but familiar

Memory: 1 Commit to memory (LTM and STM)

External Influenced Variables Aircraft position, altitude, attitude, heading, speed and g. Aircraft counter measures

Output Interface: Aircraft controls and throttles

COGNITIVE/PERCEPTUAL PROCESS

Voice: 0 None

Psychomotor: 4 Spatial encoding

Memory: 5 Memorization

INPUT/SENSATION

Vision: 1 2 Pattern, spatial relationship, tracking, graphic displays

Audition: 3 Auditory pattern

Kinesthetic: 0 None

Memory: 2 4 Semantically coded

Internal Influenced Variables Belief that the enemy is no longer a threat

Input Interface: RWR,HUD,DDI,HSD

COGNITIVE/PERCEPTUAL PROCESS

Vision: 4 Spatial encoding, visual pattern recognition

Audition: 3 Verbal decoding

Kinesthetic: 0 None

Memory: 3 Verbal decoding



Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7 3 5(a)	Goal:	that the CF-18 is manoeuvred to a position relative to the enemy where Air-to-Air weapons can be employed	Goal ID:	7 7 3 5(a)	Source Goal:	7 5 2 7(a)
Description:	While conducting the intercept, the enemy aircraft will transition from one weapons engagement zone to the next As the Aircraft approaches closer and the enemy reacts, a series of Offensive BFM manoeuvres are executed to enter and remain into WEZs						
Auditory Category:	1	Tone or Simple Auditory Sign					
External Cue:	No						
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops					
Initiating Conditions:	Enemy aircraft has been detected						
Initiating Actions:	Manoeuvre the aircraft						
Ending Conditions:	Aircraft is within WEZ		<u>KNOWLEDGE</u>				
Ending Actions:	Maintain position						
			Declarative:				
			Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, tactics, enemy tactics, enemy order of battle, enemy weapons Basic Fighter Manoeuvres				
			Situational:				
			Aircraft altitude/flight path/speed, environmental conditions Enemy type/range/altitude/position Type of weapon employed				

OUTPUT/BEHAVIOUR

Voice: 0 None

Psychomotor: 1 2 Difficult but familiar

Memory: 1 Commit to memory (LTM and STM)

**External Influenced Variables** Aircraft position, altitude, attitude, heading, speed and g

**Output Interface:** Aircraft controls and throttles HUD

COGNITIVE/PERCEPTUAL PROCESS

Voice: 0 None

Psychomotor: 4 Spatial encoding

Memory: 5 Memorization

INPUT/SENSATION

Vision: 1 2 Pattern, spatial relationship, tracking, graphic displays

Audition: 0 None

Kinesthetic: 1 1 Simple stimulus

Memory: 2 5 Complex operation

**Internal Influenced Variables** Belief that the aircraft has entered WEZ

**Input Interface:** HUD, enemy aircraft

COGNITIVE/PERCEPTUAL PROCESS

Vision: 4 Spatial encoding, visual pattern recognition

Audition: 0 None

Kinesthetic: 1 Automatised, highly learned perception

Memory: 5 Recall

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7 3 5(b)	Goal:	that the weapons solution is validated for weapons release	Goal ID:	7 7 3 5(b)	Source Goal:	7 2 2 1(g)		
<b>Description:</b>									
Confirm visually on the HUD that all required delivery parameters have been attained for release    Ensure that the proper weapon is selected and that the TDC is assigned to the appropriate display for delivery    Confirm visually on the HUD that the Master ARM is in the ARM position    Visually confirm that the desired release symbology is displayed and is valid for release    Confirm that the displayed aim point is on the DMPi (Desired Mean Point of Impact)									
<b>Auditory Category:</b>		0	None	<b>Operator:</b>	Pilot	<b>Completion Time:</b>	2		
<b>External Cue:</b>		Not Applicable			<b>Priority:</b>	2	<b>Allowable Delay (K):</b>	1 2	<b>Difficulty (D)</b>
<b>Cognitive Category:</b>		5	Memorization/recall, calculation, deduction, reasoning, high level ops	<b>Interruptable:</b>	No	<b>Sheddable:</b>	No		
<b>Initiating Conditions:</b>		Aircraft has achieved weapons release parameters and point of release is approaching						<b>Shed If Late:</b>	Not Applicable
<b>Initiating Actions:</b>		Visually confirm weapon solution						<b>Feeds Back to Higher Level Goal</b>	No
<b>Ending Conditions:</b>		Weapons solution has been validated						<b>KNOWLEDGE</b>	
<b>Ending Actions:</b>		Monitor weapons solution						<b>Declarative:</b>	Aircraft operating procedures    Tactics    Standard Operating procedures    Weapons operating procedures
<b>Initiating Actions:</b>		Visually confirm weapon solution						<b>Situational:</b>	Mission requirements and objectives    Specifics of the tactical situation (e.g. threat/friendly forces, weather, terrain, etc.)    Type of weapons delivered

<b>OUTPUT/BEHAVIOUR</b>				<b>COGNITIVE/PERCEPTUAL PROCESS</b>			
<b>Voice:</b>	0	None		<b>Voice:</b>	0	None	
<b>Psychomotor:</b>	0	None		<b>Psychomotor:</b>	0	None	
<b>Memory:</b>	1	Commit to memory (LTM and STM)		<b>Memory:</b>	5	Memorization	
<b>External Influenced Variables</b>				<b>COGNITIVE/PERCEPTUAL PROCESS</b>			
Weapons release symbology				<b>Vision:</b>	3	Verbal encoding	
<b>Output Interface:</b>				<b>Audition:</b>	0	None	
HUD and Master Arm switch				<b>Kinesthetic:</b>	0	None	
<b>INPUT/SENSATION</b>				<b>Memory:</b>	3	Verbal decoding	
<b>Vision:</b>	1 1	Text, Dial Reading		<b>Internal Influenced Variables</b>			
<b>Audition:</b>	0	None		Belief that the weapons solution displayed is valid for weapons release			
<b>Kinesthetic:</b>	0	None		<b>Input Interface:</b>			
<b>Memory:</b>	2 4	Semantically coded		HUD			

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7 3 5(c)	Goal:	that Air-to-Air weapons are launched to destroy the enemy	Goal ID:	7 7 3 5(c)	Source Goal:	7 5 2 7(c)
Description:	Select the desired A/A weapon via HOTAS Ensure that a valid solution is displayed Employ A/A weapons by pressing the trigger on the control stick Monitor weapon fly out and support missile if required						
Auditory Category:	1	Tone or Simple Auditory Sign		Operator:	Pilot	Completion Time:	
External Cue:	No			Priority:	2	Allowable Delay (K):	1 2
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops		Interruptable:	No	Sheddable:	No
Initiating Conditions:	Aircraft is within WEZ and weapon solution has been verified			Resumable:	Not Applicable	Shed If Late:	Not Applicable
Initiating Actions:	Press on the trigger			Feeds Back to Higher Level Goal	No		
Ending Conditions:	Weapon has been launched			<u>KNOWLEDGE</u>			
Ending Actions:	Monitor weapon fly out			Declarative:	Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, tactics		
				Situational:	Type of weapon employed Aircraft altitude/flight path/speed, environmental conditions Enemy type/range/altitude/position		

<u>OUTPUT/BEHAVIOUR</u>			<u>COGNITIVE/PERCEPTUAL PROCESS</u>			
Voice:	0	None	Voice:	0	None	
Psychomotor:	1	2	Difficult but familiar	Psychomotor:	4	Spatial encoding
Memory:	1	Commit to memory (LTM and STM)	Memory:	5	Memorization	
External Influenced Variables			Weapon symbology, weapon separation			
Output Interface:			HUD, HOTAS			
<u>INPUT/SENSATION</u>			<u>COGNITIVE/PERCEPTUAL PROCESS</u>			
Vision:	1	2	Pattern, spatial relationship, tracking, graphic displays	Vision:	4	Spatial encoding, visual pattern recognition
Audition:	1	Tone or simple auditory signal	Audition:	1	Automatised, highly learned perception	
Kinesthetic:	1	Simple stimulus	Kinesthetic:	1	Automatised, highly learned perception	
Memory:	2	Semantically coded	Memory:	3	Verbal decoding	
Internal Influenced Variables			belief that the desired weapon has been launched			
Input Interface:			HUD, DDI			

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7 3 5(c)	Goal:	that the engagement is egressed without compromising survival or tactical advantage	Goal ID:	7 7 3 5(e)	Source Goal:	7 5 2 5(f)
Description:							
Once enemy attack has been negated, egress engagement by unloading the aircraft while applying maximum power							
Employ a series of check turns to visually monitor threat							
Operator: Pilot							
Priority: 2 Allowable Delay (K): 1 2 Difficulty (D)							
Interruptable: No Sheddable: No							
Resumable: Not Applicable Shed If Late: Not Applicable							
Feeds Back to Higher Level Goal No							
KNOWLEDGE							
Declarative:							
Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, tactics, enemy tactics, enemy order of battle, enemy weapons Basic Fighter Manoeuvres							
Situational:							
Aircraft altitude/flight path/speed, environmental conditions Enemy type/range/altitude/position							

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	1	Voice Output	Voice:	3	Speech production
Psychomotor:	1 2	Difficult but familiar	Psychomotor:	4	Spatial encoding
Memory:	1	Commit to memory (LTM and STM)	Memory:	5	Memorization
External Influenced Variables			Aircraft position, altitude, attitude, heading, speed and g		
Output Interface:			Aircraft controls and throttles HUD		

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

Vision:	1 2	Pattern, spatial relationship, tracking, graphic displays	Vision:	4	Spatial encoding, visual pattern recognition
Audition:	5	Speech input (attended to, salient to the primary task)	Audition:	5	Verbal decoding, speech recognition
Kinesthetic:	1 1	Simple stimulus	Kinesthetic:	1	Automatised, highly learned perception
Memory:	2 5	Complex operation	Memory:	5	Recall
Internal Influenced Variables			Belief that the aircraft is no longer within immediate danger from the engagement		
Input Interface:			HUD, enemy aircraft position		

## Annex I - CF18 Air to Ground PCT Goal Analysis Results

<b>IP Number</b> 7735(g)	<b>Goal:</b> that the weapons fly out is monitored and assessed for results and/or follow on actions	<b>Goal ID:</b> 7735(g)	<b>Source Goal:</b> 7527(g)
--------------------------	--	-------------------------	-----------------------------

**Description:**  
Monitor weapon fly out visually and support missile as required Monitor Radar display Follow on with additional weapons if required

<b>Auditory Category:</b> 0 None	<b>Operator:</b> Pilot	<b>Completion Time:</b>
<b>External Cue:</b> Not Applicable	<b>Priority:</b> 4	<b>Allowable Delay (K):</b> 13 <b>Difficulty (D)</b>
<b>Cognitive Category:</b> 5 Memorization/recall, calculation, estimation, deduction, reasoning, high level ops	<b>Interruptable:</b> Yes	<b>Sheddable:</b> No
<b>Initiating Conditions:</b> Weapon has been launched	<b>Resumable:</b> Yes	<b>Shed If Late:</b> Not Applicable
<b>Initiating Actions:</b> Visually monitor displays	<b>Feeds Back to Higher Level Goal</b> No	
<b>Ending Conditions:</b> Weapon has impacted target		
<b>Ending Actions:</b> Stop attending to goal		

**KNOWLEDGE**

**Declarative:**  
Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, tactics, enemy tactics, enemy order of battle, enemy weapons

**Situational:**  
Enemy type/range/altitude/position Type of weapon employed.

---

**OUTPUT/BEHAVIOUR**

**Voice:** 0 None

**Psychomotor:** 0 None

**Memory:** 1 Commit to memory (LTM and STM)

**External Influenced Variables** None

**Output Interface:** HUD,DDI

**COGNITIVE/PERCEPTUAL PROCESS**

**Voice:** 0 None

**Psychomotor:** 0 None

**Memory:** 5 Memorization

---

**INPUT/SENSATION**

**Vision:** 12 Pattern, spatial relationship, tracking, graphic displays

**Audition:** 0 None

**Kinesthetic:** 0 None

**Memory:** 24 Semantically coded

**Internal Influenced Variables** Belief that the weapon has impacted the target

**Input Interface:** HUD,DDI,enemy aircraft

**COGNITIVE/PERCEPTUAL PROCESS**

**Vision:** 4 Spatial encoding, visual pattern recognition

**Audition:** 0 None

**Kinesthetic:** 0 None

**Memory:** 3 Verbal decoding

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7 4 1(a)	Goal:	that a detailed scan of the airspace surrounding the aircraft and the formation is conducted in order to detect enemy SAMs and AAA	Goal ID:	7 7 4 1(a)	Source Goal:	7 4 2 1(a)
<b>Description:</b> The pilot conducts a visual lookout by scanning the airspace in a 360 degree pattern around his aircraft. The visual lookout provides a final layer of protection against undetected air-to-air or surface-to-air threats or targets that may be trying to engage the pilot's formation of aircraft							
<b>Auditory Category:</b> 0 None							
<b>External Cue:</b> Not Applicable							
<b>Cognitive Category:</b> 4 Spatial encoding, decoding, pattern recognition (reading maps, giving directions)							
<b>Initiating Conditions:</b> Aircraft has entered enemy territory							
<b>Initiating Actions:</b> Start visual scan							
<b>Ending Conditions:</b> Airspace has been scanned							
<b>Ending Actions:</b> Stop attending to goal							
<b>OUTPUT/BEHAVIOUR</b>							
<b>Voice:</b> 0 None							
<b>Psychomotor:</b> 1 2 Difficult but familiar							
<b>Memory:</b> 1 Commit to memory (LTM and STM)							
<b>External Influenced Variables</b> None							
<b>Output Interface:</b> None							
<b>INPUT/SENSATION</b>							
<b>Vision:</b> 2 Peripheral							
<b>Audition:</b> 0 None							
<b>Kinesthetic:</b> 1 1 Simple stimulus							
<b>Memory:</b> 2 3 Spatially coded							
<b>Internal Influenced Variables</b> Belief that the airspace has been scanned for threats							
<b>Input Interface:</b> Surrounding airspace							

<b>KNOWLEDGE</b>							
<b>Declarative:</b> Visual lookout procedures, tactics, enemy tactics, enemy order of battle, enemy weapons							
<b>Situational:</b> Aircraft altitude/flight path/speed, environmental conditions							

<b>COGNITIVE/PERCEPTUAL PROCESS</b>							
<b>Voice:</b> 0 None							
<b>Psychomotor:</b> 4 Spatial encoding							
<b>Memory:</b> 5 Memorization							

<b>COGNITIVE/PERCEPTUAL PROCESS</b>							
<b>Vision:</b> 1 Automatised, highly learned perception							
<b>Audition:</b> 0 None							
<b>Kinesthetic:</b> 1 Automatised, highly learned perception							
<b>Memory:</b> 3 Spatial decoding							

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7 4 1(b)	Goal:	that appropriate actions are taken to counter threat displayed on the RWR	Goal ID:	7 7 4 1(b)	Source Goal:	7 4 2 1(b)
<b>Description:</b> The primary reference for displayed RWR threat emission information is the HSD. When a spike is displayed visually/aurally to the pilot, his reaction will be based on the range and lethality of the spike. If he can correlate the spike to a non-lethal threat, his reaction will likely be to continue to remain outside the threat's lethal engagement zone, or to engage and kill the enemy before it has an opportunity to engage his aircraft.  If he correlates the spike on his HSD to a threat that poses a lethal threat to his aircraft, the pilot must react defensively. He will use a combination of aggressive manoeuvres, chaff/flare, jamming, and deception to try and defeat the enemy radar and/or missiles							
Auditory Category:	3	Auditory Pattern					
External Cue:	No						
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops					
Initiating Conditions:	RWR threat has been detected						
Initiating Actions:	Manoeuvre the aircraft						
Ending Conditions:	Enemy is no longer a threat		<b>KNOWLEDGE</b>				
Ending Actions:	Monitor enemy and RWR						
<b>Declarative:</b> Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, tactics, enemy tactics, enemy order of battle, enemy weapons RWR interpretation							
<b>Situational:</b> Enemy type/range/altitude/position Type of weapon employed Information displayed on RWR							

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None
Psychomotor:	1	2 Difficult but familiar
Memory:	1	Commit to memory (LTM and STM)
External Influenced Variables	Aircraft position, altitude, attitude, heading, speed and g Aircraft counter measures	
Output Interface:	Aircraft controls and throttles	

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

Vision:	1	2 Pattern, spatial relationship, tracking, graphic displays
Audition:	3	Auditory pattern
Kinesthetic:	0	None
Memory:	2	4 Semantically coded
Internal Influenced Variables	Belief that the enemy is no longer a threat	
Input Interface:	RWR,HUD,DDI,HSD	

Vision:	4	Spatial encoding, visual pattern recognition
Audition:	3	Verbal decoding
Kinesthetic:	0	None
Memory:	3	Verbal decoding

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7 4 1(d)	Goal:	that a detailed scan of the airspace surrounding the aircraft and the formation is conducted in order to detect enemy SAMs and AAA	Goal ID:	7 7 4 1(d)	Source Goal:	7 4 2 1(g)
<b>Description:</b>							
The NVG-equipped pilot conducts a visual lookout by scanning the airspace in a 360 degree pattern around his aircraft. The visual lookout provides a final layer of protection against undetected air-to-air or surface-to-air threats and targets that may be trying to engage the pilot's formation of aircraft							
<b>Auditory Category:</b> 0 None							
<b>External Cue:</b> Not Applicable							
<b>Cognitive Category:</b> 4 Spatial encoding, decoding, pattern recognition (reading maps, giving directions)							
<b>Initiating Conditions:</b> Aircraft has entered enemy territory							
<b>Initiating Actions:</b> Start visual scan							
<b>Ending Conditions:</b> Airspace has been scanned							
<b>Ending Actions:</b> Stop attending to goal							
<b><u>OUTPUT/BEHAVIOUR</u></b>							
<b>Voice:</b> 0 None							
<b>Psychomotor:</b> 1 2 Difficult but familiar							
<b>Memory:</b> 1 Commit to memory (LTM and STM)							
<b>External Influenced Variables</b> None							
<b>Output Interface:</b> NVGs							
<b><u>INPUT/SENSATION</u></b>							
<b>Vision:</b> 1 2 Pattern, spatial relationship, tracking, graphic displays							
<b>Audition:</b> 0 None							
<b>Kinesthetic:</b> 0 None							
<b>Memory:</b> 2 3 Spatially coded							
<b>Internal Influenced Variables</b> Belief that the airspace has been scanned for threats							
<b>Input Interface:</b> NVGs							
<b><u>KNOWLEDGE</u></b>							
<b>Declarative:</b>							
Visual lookout procedures with NVG, tactics, enemy tactics, enemy order of battle, enemy weapons							
<b>Situational:</b>							
Aircraft altitude/flight path/speed, environmental conditions							



Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7 4 1(c)	Goal:	that the detected threat information is passed to formation members in a clear and concise manner using directive then descriptive commentary	Goal ID:	7 7 4 1(c)	Source Goal:	7 5 2 2(f)
Description:	The pilot advises formation members and controlling agency on visually acquired threats by voice on Have quick II radio, discreet radio or by Data Link communications. If immediate actions are required, the pilot will conduct a Directive then Descriptive commentary of the visually acquired threats. If no Immediate action are required, then the pilot uses the standardized description of the visually acquired contacts location and information						
Auditory Category:	5	Voice Output		Operator:	Pilot	Completion Time:	
External Cue:	No			Priority:	1	Allowable Delay (K):	Difficulty (D)
Cognitive Category:	3	Verbal encoding, decoding, speech production, listening		Interruptable:	No	Sheddable:	No
Initiating Conditions:	Threat has been detected			Resumable:	Not Applicable	Shed If Late:	Not Applicable
Initiating Actions:	Key the appropriate radio			Feeds Back to Higher Level Goal	No		
Ending Conditions:	Threat information has been passed						
Ending Actions:	Stop attending to goal						
				<u>KNOWLEDGE</u>			
				Declarative:			
				Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, tactics, enemy tactics, enemy order of battle, enemy weapons. Tactical communication procedures			
				Situational:			
				Enemy type/range/altitude/position. Type of weapon employed			

OUTPUT/BEHAVIOUR

Voice: 1 Voice Output

Psychomotor: 1 1 Simple

Memory: 1 Commit to memory (LTM and STM)

External Influenced Variables Radio output

Output Interface: Aircraft controls, radio

INPUT/SENSATION

Vision: 0 None

Audition: 5 Speech input (attended to, salient to the primary task)

Kinesthetic: 0 None

Memory: 2 2 Verbally coded

Internal Influenced Variables Belief that the threat information has been passed and received

Input Interface: Radio

COGNITIVE/PERCEPTUAL PROCESS

Voice: 3 Speech production

Psychomotor: 1 Automatised, highly learned

Memory: 5 Memorization

COGNITIVE/PERCEPTUAL PROCESS

Vision: 0 None

Audition: 5 Verbal decoding, speech recognition

Kinesthetic: 0 None

Memory: 3 Verbal decoding

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7751(a)	Goal:	that high speed flight is safely and efficiently conducted	Goal ID:	7751(a)	Source Goal:	7751(a)
<b>Description:</b>							
Accomplished by advancing the throttles, usually to at least MIL power or higher, and allowing the aircraft to accelerate along a level to slightly descending flight path. Once the desired airspeed is attained, the throttles are adjusted as required to maintain the target speed, and aircraft attitude is adjusted in a conventional manner reference the velocity vector in the HUD. As well, during high speed flight, heavy manoeuvring is kept to a minimum to avoid depletion of aircraft energy due to load forces							
<b>Auditory Category:</b>		0 None		<b>Operator:</b>		Pilot	
<b>External Cue:</b>		Not Applicable		<b>Priority:</b>		6	
<b>Cognitive Category:</b>		5 Memorization/recall, calculation, estimation, deduction, reasoning, high level ops		<b>Allowable Delay (K):</b>		0.2	
<b>Initiating Conditions:</b>		Decision is made to conduct high speed flight		<b>Interruptable:</b>		Yes	
<b>Initiating Actions:</b>		Advance the throttles Monitor aircraft flight parameters in HUD Properly control aircraft as acceleration occurs and high speed		<b>Resumable:</b>		Yes	
<b>Ending Conditions:</b>		High speed is no longer required or desired		<b>Sheddable:</b>		No	
<b>Ending Actions:</b>		Reduce throttles Monitor aircraft flight parameters in HUD Properly control aircraft as deceleration to lower speed is achieved		<b>Shed If Late:</b>		Not Applicable	
<b>Feeds Back to Higher Level Goal</b>		No					
				<b>KNOWLEDGE</b>			
				<b>Declarative:</b>			
				Aircraft operating instructions, aircraft handling techniques, standard operating procedures, specific orders and regulations			
				<b>Situational:</b>			
				Mission requirements/objectives, aircraft altitude, fuel status, environmental conditions, tactical situation			

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0 None	<b>Voice:</b>	0 None
<b>Psychomotor:</b>	1 2 Difficult but familiar	<b>Psychomotor:</b>	4 Spatial encoding
<b>Memory:</b>	1 Commit to memory (LTM and STM)	<b>Memory:</b>	5 Memorization
<b>External Influenced Variables</b> Aircraft position, altitude, attitude, heading, speed and g			
<b>Output Interface:</b> Aircraft controls, Throttles, HUD			
<b>INPUT/SENSATION</b>			
<b>Vision:</b>	2 Peripheral	<b>Vision:</b>	1 Automatised, highly learned perception
<b>Audition:</b>	0 None	<b>Audition:</b>	0 None
<b>Kinesthetic:</b>	1 1 Simple stimulus	<b>Kinesthetic:</b>	1 Automatised, highly learned perception
<b>Memory:</b>	2 3 Spatially coded	<b>Memory:</b>	3 Spatial decoding
<b>Internal Influenced Variables</b> Belief that high speed flight has been employed safely and efficiently			
<b>Input Interface:</b> HUD, throttle and aircraft controls, aircraft flight characteristics			

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7751(c)	Goal:	that all known threat envelopes are avoided	Goal ID:	7751(c)	Source Goal:	7751(c)
<b>Description:</b> During the mission planning phase all known threat envelopes are plotted reference the mission routing using the most current intelligence reports. Formation altitude, routing, and tactics are then decided upon that will ensure that all known threats are avoided to the maximum extent possible. Once in-flight, the pilot references his HSD to note his present position, flight path, and the location of all known threat envelopes displayed via MIDS if his flight path will fall inside one of the threat rings depicted on the HSD (normally a red ring or a red 3-D volume of airspace), he manoeuvres laterally and/or vertically to ensure the threat ring will be avoided. Aircraft speed may also be adjusted in order to achieve the desired result.							
<b>Auditory Category:</b>		0	None	<b>Operator:</b>	Pilot	<b>Completion Time:</b>	15
<b>External Cue:</b>		Not Applicable		<b>Priority:</b>	3	<b>Allowable Delay (K):</b>	<b>Difficulty (D)</b>
<b>Cognitive Category:</b>		5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops	<b>Interruptable:</b>	No	<b>Sheddable:</b>	No
<b>Initiating Conditions:</b>		Ingress phase of mission, at/beyond FLOT	Threat envelopes a factor	<b>Resumable:</b>	Not Applicable	<b>Shed If Late:</b>	Not Applicable
				<b>Feeds Back to Higher Level Goal</b>			
				No			
				<b>KNOWLEDGE</b>			
				<b>Declarative:</b>			
				Standard operating procedures, classified aircraft operating procedures, intelligence on enemy electronic order of battle, tactics			
				<b>Situational:</b>			
				Mission objectives/priorities, tactical situation, weather, terrain, threat activity and location			

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0	None
<b>Psychomotor:</b>	1	2 Difficult but familiar
<b>Memory:</b>	1	Commit to memory (LTM and STM)
<b>External Influenced Variables</b>		
Aircraft position, altitude, attitude, heading, speed and g		
<b>Output Interface:</b>		
HSD, LINK-16, EGI, HUD, DEWs, Aircraft Controls, Throttles		
Observe threat envelopes on HSD, status of DEWs		

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

<b>Vision:</b>	1	2 Pattern, spatial relationship, tracking, graphic displays
<b>Audition:</b>		
<b>Kinesthetic:</b>	1	1 Simple stimulus
<b>Memory:</b>	2	5 Complex operation
<b>Internal Influenced Variables</b>		
Belief that all significant threat envelopes have been avoided		
<b>Input Interface:</b>		
Link 16 display on HSD, status of DECM suite, correlated tactical information, visual confirmation of lack of missile launches from correlated threats		

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7 5 1(d)	Goal:	that a mental target area tactical picture is built	GoalID:	7 7 5 1(d)	Source Goal:	7 2 2 1(m)
<b>Description:</b> Adjust and/or confirm LINK 16/MIDS Tactical Display parameters to ensure the desired airspace in the Target area is covered. Observe picture being built on the LINK 16/MIDS Tactical Display. Visually confirm position of formation members as well as other Friendly Aircraft, Elements or Sections conducting operation within the target area. Monitor Adversary Disposition in the target Area by analyzing displayed information. Mentally build general picture and situational awareness.							
<b>Auditory Category:</b>		1 Tone or Simple Auditory Sign		<b>Operator:</b>		Pilot	
<b>External Cue:</b>		No		<b>Priority:</b>		5	
<b>Cognitive Category:</b>		5 Memorization/recall, calculation, estimation, deduction, reasoning, high level ops		<b>Allowable Delay (K):</b>		Difficulty (D)	
<b>Initiating Conditions:</b>		Target area is approaching		<b>Interruptable:</b>		Sheddable:	
				<b>Resumable:</b>		Not Applicable	
				<b>Feeds Back to Higher Level Goal</b>		No	
<b>Auditory Category:</b> 1 Tone or Simple Auditory Sign				<b>Completion Time:</b>			
<b>External Cue:</b> No				<b>Sheddable:</b>			
<b>Cognitive Category:</b> 5 Memorization/recall, calculation, estimation, deduction, reasoning, high level ops				<b>Shed If Late:</b> Not Applicable			
<b>Initiating Conditions:</b> Target area is approaching				<b>Feeds Back to Higher Level Goal</b> No			
<b>Initiating Actions:</b> Link 16/MIDS and/or other sources are crosschecked to confirm target area tactical picture				<b>Declarative:</b>			
<b>Ending Conditions:</b> Target is impending and tactical picture is sufficiently built				Mission objectives/priorities, tactical situation, weather, terrain, threat activity and location			
<b>Ending Actions:</b> Target attack is carried out				<b>Situational:</b>			
				Mission objectives/priorities, tactical situation, weather, terrain, threat activity and location			

**OUTPUT/BEHAVIOUR**  
**Voice:** 1 Voice Output  
**Psychomotor:** 0 None  
**Memory:** 1 Commit to memory (LTM and STM)  
**External Influenced Variables** None  
**Output Interface:** DDI Link 16/MIDS Radios

**COGNITIVE/PERCEPTUAL PROCESS**  
**Voice:** 3 Speech production  
**Psychomotor:** 0 None  
**Memory:** 5 Memorization

<b>INPUT/SENSATION</b>		<b>COGNITIVE/PERCEPTUAL PROCESS</b>	
<b>Vision:</b>	1 2 Pattern, spatial relationship, tracking, graphic displays	<b>Vision:</b>	4 Spatial encoding, visual pattern recognition
<b>Audition:</b>	2 Speech input (incidental to the primary task)	<b>Audition:</b>	2 Passive (pre-attentive) monitoring of auditory signals
<b>Kinesthetic:</b>	1 1 Simple stimulus	<b>Kinesthetic:</b>	1 Automatised, highly learned perception
<b>Memory:</b>	2 5 Complex operation	<b>Memory:</b>	5 Recall
<b>Internal Influenced Variables</b> A belief that the mental target area picture is sufficient			
<b>Input Interface:</b> DDI Link 16/MIDS Radios			

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7752(a)	Goal:	that appropriate actions are taken to counter threat displayed on the RWR	Goal ID:	7752(a)	Source Goal:	7421(b)
<b>Description:</b>							
The primary reference for displayed RWR threat emission information is the HSD. When a spike is displayed visually/aurally to the pilot, his reaction will be based on the range and lethality of the spike. If he can correlate the spike to a non-lethal threat, his reaction will likely be to continue to remain outside the threat's lethal engagement zone, or to engage and kill the enemy before it has an opportunity to engage his aircraft.							
If he correlates the spike on his HSD to a threat that poses a lethal threat to his aircraft, the pilot must react defensively. He will use a combination of aggressive manoeuvres, chaff/flare, jamming, and deception to try and defeat the enemy radar and/or missiles.							
<b>Auditory Category:</b> 3 Auditory Pattern							
<b>External Cue:</b> No							
<b>Cognitive Category:</b> 5 Memorization/recall, calculation, estimation, deduction, reasoning, high level ops							
<b>Initiating Conditions:</b> RWR threat has been detected							
<b>Initiating Actions:</b> Manoeuvre the aircraft							
<b>Ending Conditions:</b> Enemy is no longer a threat							
<b>Ending Actions:</b> Monitor enemy and RWR							
<b>KNOWLEDGE</b>							
<b>Declarative:</b>							
Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, tactics, enemy tactics, enemy order of battle, enemy weapons RWR interpretation							
<b>Situational:</b>							
Enemy type/range/altitude/position Type of weapon employed Information displayed on RWR							

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0 None	<b>Voice:</b>	0 None
<b>Psychomotor:</b>	1 2 Difficult but familiar	<b>Psychomotor:</b>	4 Spatial encoding
<b>Memory:</b>	1 Commit to memory (LTM and STM)	<b>Memory:</b>	5 Memorization
<b>External Influenced Variables</b> Aircraft position, altitude, attitude, heading, speed and g Aircraft counter measures			
<b>Output Interface:</b> Aircraft controls and throttles			

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

<b>Vision:</b>	1 2 Pattern, spatial relationship, tracking, graphic displays	<b>Vision:</b>	4 Spatial encoding, visual pattern recognition
<b>Audition:</b>	3 Auditory pattern	<b>Audition:</b>	3 Verbal decoding
<b>Kinesthetic:</b>	0 None	<b>Kinesthetic:</b>	0 None
<b>Memory:</b>	2 4 Semantically coded	<b>Memory:</b>	3 Verbal decoding
<b>Internal Influenced Variables</b> Belief that the enemy is no longer a threat			
<b>Input Interface:</b> RWR,HUD,DDI,HSD			

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7752(b)	Goal:	that all correlated radar threats are jammed effectively	Goal ID:	7752(b)	Source Goal:	7523(c)		
<b>Description:</b> The jammers generally function automatically. The pilot can optimize jammers employment by analyzing their coverage on the Integrated HSD display, ensuring that the intended enemy threats are within the displayed jammers coverage. If the enemy threats are outside the displayed Area, the pilot will manoeuvre the aircraft to place the threats within coverage									
Auditory Category:	1	Tone or Simple Auditory Sign		Operator:	Pilot	Completion Time:			
External Cue:	No			Priority:	3	Allowable Delay (K):	Difficulty (D)		
Cognitive Category:	4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)		Interruptable:	No	Sheddable:	No		
Initiating Conditions:	Correlated radar threat is deemed a priority sufficient to require jamming			Resumable:	Not Applicable	Shed If Late:	Not Applicable		
Initiating Actions:	Observe jamming is being applied to correlated radar threat			Feeds Back to Higher Level Goal	No	<u>KNOWLEDGE</u>			
Ending Conditions:	Correlated radar threat no longer constitutes a threat sufficient to warrant jamming			<b>Declarative:</b> Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, tactics, enemy tactics, enemy electronic order of battle					
Ending Actions:	Observe jamming has ceased			<b>Situational:</b> Mission objectives/requirements, tactical situation, aircraft altitude/flight path/speed, environmental conditions					

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None
Psychomotor:	1	Automatised, highly learned
Memory:	5	Memorization
External Influenced Variables	Aircraft position, altitude, attitude, heading, speed and g Jammer controls/settings	
Output Interface:	Jammer display HSD RWR	

INPUT/SENSATION

COGNITIVE/PERCEPTUAL PROCESS

Vision:	1	2	Pattern, spatial relationship, tracking, graphic displays
Audition:	1		Tone or simple auditory signal
Kinesthetic:	0		None
Memory:	2	4	Semantically coded
Internal Influenced Variables	Belief that jammers have been effectively employed		
Input Interface:	RWR Link 16 Enemy radar/missile activity		

Vision:	4	Spatial encoding, visual pattern recognition
Audition:	1	Automatised, highly learned perception
Kinesthetic:	0	None
Memory:	3	Verbal decoding

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7 5 2(c)	Goal:	that chaff is dispensed	Goal ID:	7 7 5 2(c)	Source Goal:	7 5 2 3(b)
Description:	Chaff is dispensed by selecting the desired program on the ALE-47 controls, and either by activating the canopy panic button or via HOTAS controls						
Auditory Category:	1	Tone or Simple Auditory Sign		Operator:	Pilot	Completion Time:	
External Cue:	No			Priority:	2	Allowable Delay (K):	1 1
Cognitive Category:	1	Automatized, highly learned (easy to do for a trained person)		Interruptable:	No	Sheddable:	No
Initiating Conditions:	Chaff is required			Resumable:	Not Applicable	Shed If Late:	Not Applicable
Initiating Actions:	Either Chaff HOTAS switch is used or chaff multiple dispense button is depressed			Feeds Back to Higher Level Goal	No		
Ending Conditions:	Chaff is dispensed						
Ending Actions:	Stop attending to goal						
Output/Behaviour							
Voice:	0	None					
Psychomotor:	1 1	Simple					
Memory:	1	Commit to memory (LTM and STM)					
External Influenced Variables	Aircraft speed, g	Aircraft configuration (chaff/flare bundles)					
Output Interface:	DEWS ALR 67 (rwr)						
Input/Sensation							
Vision:	1 1	Text, Dial Reading					
Audition:	1	Tone or simple auditory signal					
Kinesthetic:	1 1	Simple stimulus					
Memory:	2 3	Spatially coded					
Internal Influenced Variables	A belief that chaff has been successfully deployed						
Input Interface:	DEWS ALR 67 (rwr)						
Declarative:	Mission objectives/priorities, tactical situation, weather, terrain, threat activity and location Intelligence on enemy electronic order of battle,						
Situational:	Type of threat						
KNOWLEDGE							

COGNITIVE/PERCEPTUAL PROCESS

Voice:	0	None
Psychomotor:	1	Automatised, highly learned
Memory:	5	Memorization
Cognitive/Perceptual Process		
Vision:	3	Verbal encoding
Audition:	1	Automatised, highly learned perception
Kinesthetic:	1	Automatised, highly learned perception
Memory:	3	Spatial decoding

INPUT/SENSATION

Vision:	1 1	Text, Dial Reading
Audition:	1	Tone or simple auditory signal
Kinesthetic:	1 1	Simple stimulus
Memory:	2 3	Spatially coded
Internal Influenced Variables	A belief that chaff has been successfully deployed	
Input Interface:	DEWS ALR 67 (rwr)	

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7 5 3(a)	Goal:	that terrain masking is used to avoid enemy radar	Goal ID:	7 7 5 3(a)	Source Goal:	7.7.2.1(f)
Description:	If able, aircraft routing is chosen during the mission planning phase to maximize the pilot's ability to exploit the terrain along his route to his advantage. If not, the pilot chooses his flight path visually and then descends his aircraft to low altitude. The pilot manoeuvres his aircraft laterally and vertically in order to ensure that the local terrain blocks the line-of-sight between his aircraft and the enemy						
Auditory Category:	0	None	<div>Operator: Pilot</div> <div>Priority: 2</div> <div>Allowable Delay (K): 1 2</div> <div>Difficulty (D)</div> <div>Interruptable: No</div> <div>Sheddable: No</div> <div>Resumable: Not Applicable</div> <div>Shed If Late: Not Applicable</div> <div>Feeds Back to Higher Level Goal No</div> <div><u>KNOWLEDGE</u></div> <div>Declarative:</div> <div>Intelligence on enemy electronic order of battle Classified aircraft operating instructions</div>				
External Cue:	Not Applicable						
Cognitive Category:	4	Spatial encoding, decoding, pattern recognition (reading maps, giving directions)					
Initiating Conditions:	Terrain masking is required to avoid or lose an enemy radar						
Initiating Actions:	Terrain is placed between enemy radar and aircraft						
Ending Conditions:	Enemy radar is avoided		<div>Situational:</div> <div>Type of threat Tactical situation</div>				
Ending Actions:	Stop attending to goal						

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0	None	<b>Voice:</b>	0	None	
<b>Psychomotor:</b>	1	2	Difficult but familiar	<b>Psychomotor:</b>	4	Spatial encoding
<b>Memory:</b>	1	Commit to memory (LTM and STM)	<b>Memory:</b>	5	Memorization	
<b>External Influenced Variables</b>			Aircraft position, altitude, attitude, heading, speed and g			
<b>Output Interface:</b>			Visual lookout ALR 67 (rwr) Link 16/MIDS			
<b><u>INPUT/SENSATION</u></b>						
<b>Vision:</b>	1	1	Text, Dial Reading	<b>Vision:</b>	3	Verbal encoding
<b>Audition:</b>	0	None	<b>Audition:</b>	0	None	
<b>Kinesthetic:</b>	1	1	Simple stimulus	<b>Kinesthetic:</b>	1	Automatised, highly learned perception
<b>Memory:</b>	2	1	Accessible, familiar	<b>Memory:</b>	1	Automatised
<b>Internal Influenced Variables</b>			A belief that terrain masking has been successfully deployed			
<b>Input Interface:</b>			Visual lookout ALR 67 (rwr) Link 16/MIDS			



Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7.6 1(b)	Goal:	that defensive counter measures are employed in order to maximize effectiveness and ensure survivability	Goal ID:	7 7 6 1(b)	Source Goal:	7 7 6 1(b)
Description:	As part of his systems check on the ground the pilot ensures that the defensive counter measures suite is loaded and configured properly. He then ensures it passes all respective BIT tests on start-up. During the fence-in check, the pilot ensures the system is set to AUTO to allow systems such as on-board jammers to function in their normal, automatic mode. The HSD and HUD are the primary references for RWR and HSD information for the pilot when he is employing defensive countermeasures. Using this displayed information, the pilot will position his aircraft so as to maximize the effectiveness of his RWR and Jammer. Conventional defensive counter measures such as heavy manoeuvring, AAMD, IRCM, and the employment of chaff/flare from the ALE-47 will be used as the pilot deems fit to optimize the desired result						
Auditory Category:	1	Tone or Simple Auditory Sign		Operator:	Pilot	Completion Time:	60
External Cue:	No			Priority:	2	Allowable Delay (K):	1 1
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops		Interruptable:	No	Sheddable:	No
Initiating Conditions:	Tactical phase of mission	Threat exists significant enough to require the employment of defensive counter measures		Resumable:	Not Applicable	Shed If Late:	Not Applicable
Initiating Actions:	Determine type/order of defensive countermeasures to be employed(avoidance/manoeuvres/chaff/flare/jamming/terrain mask)			Feeds Back to Higher Level Goal	No		
Ending Conditions:	Threat no longer significant enough to require employment of defensive counter measures and/or tactical phase of mission end						
Ending Actions:	Stop employing defensive counter measures	Resume current mission tasks					
Declarative:	Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, enemy electronic order of battle, tactics, intelligence reports						
Situational:	Mission objectives/priorities, tactical situation, weather, terrain, threat activity and location, stage of mission						
KNOWLEDGE							

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0	None	<b>Voice:</b>	0	None	
<b>Psychomotor:</b>	1	2	Difficult but familiar	<b>Psychomotor:</b>	4	Spatial encoding
<b>Memory:</b>	1	Commit to memory (LTM and STM)		<b>Memory:</b>	5	Memorization
<b>External Influenced Variables</b>			HOTAS, DEWS, Link-16 display, aircraft position, altitude, attitude, heading, speed and g			
<b>Output Interface:</b>			HOTAS, HUD, DECM Suite, LINK-16, HSD, Aircraft Controls, Throttles			
<b><u>INPUT/SENSATION</u></b>			<b><u>COGNITIVE/PERCEPTUAL PROCESS</u></b>			
<b>Vision:</b>	1	2	Pattern, spatial relationship, tracking, graphic displays	<b>Vision:</b>	4	Spatial encoding, visual pattern recognition
<b>Audition:</b>	1	Tone or simple auditory signal		<b>Audition:</b>	1	Automatised, highly learned perception
<b>Kinesthetic:</b>	1	1	Simple stimulus	<b>Kinesthetic:</b>	1	Automatised, highly learned perception
<b>Memory:</b>	2	4	Semantically coded	<b>Memory:</b>	3	Verbal decoding
<b>Internal Influenced Variables</b>			Belief that defensive countermeasures have been employed to effectively counter all significant threats encountered			
<b>Input Interface:</b>			status of DEWS suite (ALE-47/jammers/RWR), monitoring of Link-16 display on HSD, status of enemy threats			

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7 6 3(a)	Goal:	that RMD is properly executed to ensure survivability against surface-to-air threats	Goal ID:	7.7 6 3(a)	Source Goal:	7.7 6 3(a)
<b>Description:</b> Using all information available at the time the pilot will try and determine the type/azimuth/range/status of the radar that is illuminating his RWR. Assuming the surface-to-air threat is of a critical nature, the pilot will turn aggressively to place the threat radar at his 3 or 9 o'clock position while descending and deploying chaff. He will make use of terrain masking if practical. He will ensure, using his HSD and HUD, that he maintains the enemy radar signal on his wing line, and that his on-board jammer is working to defeat the host radar and any inbound missiles. He will continue to use chaff and begin a visual lookout. If missiles are visually sighted and considered a threat, a visual missile defence is executed							
<b>Auditory Category:</b>		1	Tone or Simple Auditory Sign	<b>Operator:</b>	Pilot	<b>Completion Time:</b>	60
<b>External Cue:</b>		No		<b>Priority:</b>	1	<b>Allowable Delay (K):</b>	<b>Difficulty (D)</b>
<b>Cognitive Category:</b>		5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops	<b>Interruptable:</b>	No	<b>Sheddable:</b>	No
<b>Initiating Conditions:</b>		Surface-to-air radar missile launch on formation aircraft is detected using on board systems		<b>Resumable:</b>	Not Applicable	<b>Shed If Late:</b>	Not Applicable
				<b>Feeds Back to Higher Level Goal</b>			
				No			
				<b>Declarative:</b>			
				Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, enemy electronic order of battle, tactics, intelligence reports			
				<b>Situational:</b>			
				Aircraft altitude/airspeed, aircraft configuration, status of defensive countermeasures, tactical situation, risk of follow on engagement by other enemy threats			

KNOWLEDGE

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0	None	<b>Voice:</b>	0	None
<b>Psychomotor:</b>	1	2	<b>Psychomotor:</b>	4	Spatial encoding
<b>Memory:</b>	1	Commit to memory (LTM and STM)	<b>Memory:</b>	5	Memorization
<b>External Influenced Variables</b> HOTAS, DEWS status, aircraft position, altitude, attitude, heading, speed and g					
<b>Output Interface:</b> HOTAS, HUD, DEWS, LINK-16, RWR, HSD, Aircraft Controls, Throttles					
<b>INPUT/SENSATION</b>					
<b>Vision:</b>	1	2	<b>Vision:</b>	4	Spatial encoding, visual pattern recognition
<b>Audition:</b>	1	Tone or simple auditory signal	<b>Audition:</b>	1	Automatised, highly learned perception
<b>Kinesthetic:</b>	1	1	<b>Kinesthetic:</b>	1	Automatised, highly learned perception
<b>Memory:</b>	2	5	<b>Memory:</b>	5	Recall
<b>Internal Influenced Variables</b> Belief that surface-to-air RMD has been effectively carried out, and all correlated radar threats have been defeated					
<b>Input Interface:</b> Visually confirming that a sufficient miss distance is created prior to missile warhead detonation occurs, lack of aircraft damage					

## Annex I - CF18 Air to Ground PCT Goal Analysis Results

<b>IP Number</b> 7763(b)	<b>Goal:</b> that IRMD is properly executed to ensure survivability against surface-to-air threats	<b>Goal ID:</b> 7763(b)	<b>Source Goal:</b> 7763(b)
--------------------------	--	-------------------------	-----------------------------

**Description:**  
 After sighting the missile launch, the pilot will assess whether or not it poses a threat to him. If he determines it does, he will manoeuvre hard to place the missile on his wing line. As he rolls out of the turn he will reduce his throttles and begin employing IRCM. He will also deploy flares from his ALE-47 as per SOPs. With approximately 3-5 seconds prior to missile intercept the pilot will carry out a visual 3-D barrel roll manoeuvre around the inbound missile and begin deploying flares at a higher rate, in order to ensure a significant miss distance occurs before the missile's warhead detonates.

<b>Auditory Category:</b> 0 None	<b>Operator:</b> Pilot	<b>Completion Time:</b> 60
<b>External Cue:</b> Not Applicable	<b>Priority:</b> 1	<b>Allowable Delay (K):</b> <b>Difficulty (D)</b>
<b>Cognitive Category:</b> 5 Memorization/recall, calculation, estimation, deduction, reasoning, high level ops	<b>Interruptable:</b> No	<b>Sheddable:</b> No
<b>Initiating Conditions:</b> Uncorrelated missile launch is visually sighted with no RWR indications	<b>Resumable:</b> Not Applicable	<b>Shed If Late:</b> Not Applicable

**Feeds Back to Higher Level Goal** No

**KNOWLEDGE**

**Declarative:**  
 Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, enemy electronic order of battle, tactics, intelligence reports

**Situational:**  
 Aircraft altitude/airspeed, aircraft configuration, status of defensive countermeasures, proximity of missile when sighted, tactical situation, risk of follow on engagement by other enemy threats

---

**OUTPUT/BEHAVIOUR**

**Voice:** 0 None

**Psychomotor:** 1 2 Difficult but familiar

**Memory:** 1 Commit to memory (LTM and STM)

**External Influenced Variables** HOTAS, DEWS (flares), aircraft position, altitude, attitude, heading, speed and g

**Output Interface:** HOTAS, HUD, ALE-47, LINK-16, Aircraft Controls, Throttles

**COGNITIVE/PERCEPTUAL PROCESS**

**Voice:** 0 None

**Psychomotor:** 4 Spatial encoding

**Memory:** 5 Memorization

**COGNITIVE/PERCEPTUAL PROCESS**

<b>Vision:</b> 4 Spatial encoding, visual pattern recognition	<b>Vision:</b> 4 Spatial encoding, visual pattern recognition
<b>Audition:</b> 1 Tone or simple auditory signal	<b>Audition:</b> 1 Automatized, highly learned perception
<b>Kinesthetic:</b> 1 Simple stimulus	<b>Kinesthetic:</b> 1 Automatized, highly learned perception
<b>Memory:</b> 2.5 Complex operation	<b>Memory:</b> 5 Recall

**Internal Influenced Variables** Belief that surface-to-air IRMD has been successfully carried out, and all significant IR threats have been defeated

**Input Interface:** Visually confirming that a sufficient miss distance is created prior to missile warhead detonation occurs, lack of aircraft damage

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7 6 3(c)	Goal:	that air to air missile defence is properly executed to ensure survivability against air-to-air threats	Goal ID:	7 7 6 3(c)	Source Goal:	7 5 2 5(c)
Description:	Employ defensive BFM manoeuvres to negate enemy attack. Assess bandit reposition and perform last ditch manoeuvring. If unsuccessful, manoeuvre the aircraft into a series of Guns defence and junks						
Auditory Category:	1	Tone or Simple Auditory Sign		Operator:	Pilot	Completion Time:	
External Cue:	No			Priority:	1	Allowable Delay (K):	Difficulty (D)
Cognitive Category:	5	Memorization/recall, calculation, estimation, deduction, reasoning, high level ops		Interruptable:	No	Sheddable:	No
Initiating Conditions:	Air-to-air radar missile launch on formation aircraft is detected using on board systems			Resumable:	Not Applicable	Shed If Late:	Not Applicable
				Feeds Back to Higher Level Goal	No		
							<u>KNOWLEDGE</u>
				Declarative:			Aircraft operating procedures, standard operating procedures, classified aircraft operating procedures, enemy electronic order of battle, tactics, intelligence reports
Initiating Actions:	Visually reference DEWS/tactical information on HSD. Decide on priority/type of radar missile defence to be carried out (terr)			Situational:			Aircraft altitude/airspeed, aircraft configuration, status of defensive countermeasures, tactical situation, risk of follow on engagement by other enemy threats
Ending Conditions:	Missile no longer poses a significant threat to aircraft						
Ending Actions:	Check for follow on missile launches. Monitor Enemy aircraft. Regain formation mutual support and visual lookout. Resume current mission tasks						

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0	None	<b>Voice:</b>	0	None	
<b>Psychomotor:</b>	1	2	Difficult but familiar	<b>Psychomotor:</b>	4	Spatial encoding
<b>Memory:</b>	1	Commit to memory (LTM and STM)	<b>Memory:</b>	5	Memorization	
<b>External Influenced Variables</b> HOTAS, DEWS status, aircraft position, altitude, attitude, heading, speed and g    Enemy aircraft position						
<b>Output Interface:</b> HOTAS, HUD, DEWS, LINK-16, RWR, HSD, Aircraft Controls, Throttles						
<u><b>INPUT/SENSATION</b></u>						
<b>Vision:</b>	1	2	Pattern, spatial relationship, tracking, graphic displays	<b>Vision:</b>	4	Spatial encoding, visual pattern recognition
<b>Audition:</b>	1	Tone or simple auditory signal	<b>Audition:</b>	1	Automatised, highly learned perception	
<b>Kinesthetic:</b>	1	1	Simple stimulus	<b>Kinesthetic:</b>	1	Automatised, highly learned perception
<b>Memory:</b>	2	5	Complex operation	<b>Memory:</b>	5	Recall
<b>Internal Influenced Variables</b> Belief that air-to-air missile has been effectively carried out, and all correlated air to air threats have been defeated						
<b>Input Interface:</b> Visually confirming that a sufficient miss distance is created prior to missile warhead detonation occurs, lack of aircraft damage						

Annex I - CF18 Air to Ground PCT Goal Analysis Results

IP Number	7 7 6 3(d)	Goal:	that external stores are jettisoned	Goal ID:	7 7 6 3(d)	Source Goal:	7 7 3 6(i)
<b>Description:</b>							
The pilot reaches down with his left hand and presses the Selective Jettison Button to jettison the pre-selected external stores. If a more immediate action is required and the pilot requires to jettison all external stores, he reaches up with his left hand and presses the Emergency Jettison Button to Jettison all external stores							
<b>Auditory Category:</b>		1	Tone or Simple Auditory Sign	<b>Operator:</b>	Pilot	<b>Completion Time:</b>	
<b>External Cue:</b>		No		<b>Priority:</b>	5	<b>Allowable Delay (K):</b>	<b>Difficulty (D)</b>
<b>Cognitive Category:</b>		1	Automatized, highly learned (easy to do for a trained person)	<b>Interruptable:</b>		<b>Sheddable:</b>	
<b>Initiating Conditions:</b>		External stores jettison is required		<b>Resumable:</b>	Not Applicable	<b>Shed If Late:</b>	Not Applicable
				<b>Feeds Back to Higher Level Goal</b>	No	<b><u>KNOWLEDGE</u></b>	
				<b>Declarative:</b>		Aircraft Operating Instructions	
<b>Initiating Actions:</b>		External Stores Jettison is programmed and button is depressed		<b>Situational:</b>		Present stores on board Tactical situation	
<b>Ending Conditions:</b>		External Stores are jettisoned					
<b>Ending Actions:</b>		Stop attending to goal					

OUTPUT/BEHAVIOUR

COGNITIVE/PERCEPTUAL PROCESS

<b>Voice:</b>	0	None	<b>Voice:</b>	0	None
<b>Psychomotor:</b>	1	Simple	<b>Psychomotor:</b>	1	Automatised, highly learned
<b>Memory:</b>	1	Commit to memory (LTM and STM)	<b>Memory:</b>	5	Memorization
<b>External Influenced Variables</b> Aircraft stores configuration Aircraft position, altitude, attitude, heading, speed and g					
<b>Output Interface:</b> DDI (stores page) Jettison Panel					
<b>INPUT/SENSATION</b>					
<b>Vision:</b>	1	Text, Dial Reading	<b>Vision:</b>	3	Verbal encoding
<b>Audition:</b>	0	None	<b>Audition:</b>	0	None
<b>Kinesthetic:</b>	1	Simple stimulus	<b>Kinesthetic:</b>	1	Automatised, highly learned perception
<b>Memory:</b>	2	Accessible, familiar	<b>Memory:</b>	1	Automatised
<b>Internal Influenced Variables</b> Belief that stores have been jettisoned					
<b>Input Interface:</b> DDI (stores page) Jettison Panel					

DOCUMENT CONTROL DATA SHEET		
<b>1a PERFORMING AGENCY</b>  The HFE Group; 220 Laurier Ave West, Suite 350		<b>2. SECURITY CLASSIFICATION</b>  UNCLASSIFIED Unlimited distribution -
<b>1b PUBLISHING AGENCY</b>  DCIEM		
<b>3 TITLE</b>  (U) System Analysis Report Human Factors Engineering System Analysis of CF18A Air to Ground Operations		
<b>4 AUTHORS</b>  Mike Wellwood Nadine Wellwood Didier Toussaint		
<b>5. DATE OF PUBLICATION</b>  June 1 , 2001		<b>6. NO OF PAGES</b>  277
<b>7. DESCRIPTIVE NOTES</b>		
<b>8. SPONSORING/MONITORING/CONTRACTING/TASKING AGENCY</b> Sponsoring Agency: Monitoring Agency: Contracting Agency: Tasking Agency:		
<b>9 ORIGINATORS DOCUMENT NO</b>  Contract Report CR 2001-072	<b>10 CONTRACT GRANT AND/OR PROJECT NO</b>  W7711-007675	<b>11. OTHER DOCUMENT NOS.</b>
<b>12. DOCUMENT RELEASABILITY</b>  Unlimited distribution		
<b>13 DOCUMENT ANNOUNCEMENT</b>  Unlimited announcement		

## 14 ABSTRACT

(U) The Directorate of Aerospace Requirements (DAR 5) is in the process of upgrading the CF-18A to maintain its technical currency over the next 20 years. Part of this upgrade will be the inclusion of a Helmet Mounted Display (HMD) with a Night Vision Imaging System (NVIS) capability. The Defence and Civil Institute of Environmental Medicine (DCIEM) has undertaken an investigation of HMD and NVIS technologies in order to provide DAR with advice on human factors issues that may arise from their use in the CF-18A. The investigation will focus on the Air to Ground role of the CF-18A as this is the most likely role in North Atlantic Treaty Organization (NATO) and coalition activities. The Air to Ground role of the CF-18A also presents a high cognitive demand on the skills and abilities of the pilot. This report is the second of two Human Factors Engineering (HFE) reports prepared for DCIEM in support of DAR 5. The first report is a Mission Analysis Report of CF18 Air to Ground Operations and should be read in conjunction with this report. This report provides the detailed results of an HFE study of the employment of the CF-18A in an operational Air to Ground environment. The analysis was conducted without the inclusion of the HMD in order to provide a baseline for assessing the future impact of HMD and NVIS procurements on the modernized fighter. This report includes a Goal Decomposition, Goal Allocation, Operation Sequence Diagrams, Critical Goal Analysis and a Perceptual Control Theory (PCT) based Information Flow and Processing Analysis. The results of the HFE Analysis will be used to assess the impact of HMD and NVG technologies and the flow of information in the cockpit of the Modernized CF-18A.

## 15 KEYWORDS, DESCRIPTORS or IDENTIFIERS

(U) F18; CF18A; air to ground

# 516196  
CA011642